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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN PERCEPTION LEVELS OF PRIME BEEF TRAINING AND READINESS TASK CONFIDENCE

THESIS

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But the biggest slice of gratitude goes to my sweet wife, Landa. These eighteen months have been bittersweet; my continuous absence (physically and mentally) while devoting my time to this research would have been much tougher for you, had it not been for the birth of our first child Grayson. What a joy he has been! Through it all, you have remained a loving and patient wife and a devoted mother, and I couldn't have done it without you. Now begins yet another new chapter in our lives.

"I can do <u>all</u> things through Christ who strengthens me". Phillipians 4:13

D. Wade Lawrence

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Abstract

This thesis examined the readiness training perception levels and task self-confidence of CE Prime BEEF personnel, and investigated the relationships between these two constructs. A heuristic model was developed which hypothesized that since previous research has shown that perception of training affects self-efficacy, and that self-efficacy affects performance, it may be inferred that training perception ultimately affects task performance. Surveys were sent to the target population to gather demographic data, perceptions of Prime BEEF readiness training and task confidence in both self and unit.

Despite an improvement in perceptions over the past 12 years, results showed somewhat mediocre perception levels of readiness training, although task confidence yielded significantly higher mean Likert scale scores. Correlational analysis indicated a statistically significant, moderate correlation between perception of readiness training and task self-confidence, lending strength to the proposed model. Training adequacy and effectiveness were the aspects most strongly correlated with task self-confidence, while training realism and hands-on had the weakest correlation with task self-confidence out of all aspects of training quality. Few demographic variables showed statistically significant correlation with training perception or confidence. Time spent in readiness training and the percent of time performing tasks during peacetime duties which closely resemble wartime tasks had the strongest correlation to task confidence out of all demographic variables. Finally, analysis indicated that officers tend to have lower readiness training perception levels and task confidence than do enlisted personnel.

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I. Introduction

Background and Justification

In the realm of American military engineering, the modern Air Force base-level Civil Engineer (CE) squadron is an anomaly, with a personnel structure and peacetime mission quite different from any other military engineering unit. Its uniqueness can be explained in part by its history and the controversies that helped shape it into its current form. When the Air Force became an independent service in 1947, the Army retained the responsibility of supporting the Air Force's combat engineering requirements in an effort to avoid duplicative support operations. In the years following the Korean War, political conflict with the Army over obtaining an organic Air Force wartime engineering arm (Ashdown, 1984: 33), coupled with problems during real-world contingencies such as the Lebanon Crisis of 1958 (Moe and Waggoner, 1985: 191) highlighted the void in the Air Force combat engineering support capability. It was not until the buildup in Vietnam that it became obvious to senior Pentagon leadership that the Army and Navy were unable to

shoulder the Air Force's wartime engineering requirements in addition to their own (Ashdown, 1984: 45).

The Prime BEEF (Base Engineer Emergency Force) was created in 1964 to fill this void, formally establishing structured, combat-ready forces as the backbone of Air Force Civil Engineering (AFCE) support during wartime and contingencies. Prime BEEF personnel are mobility-oriented, highly-skilled specialists who are responsible for combat engineering tasks, to include: beddown of personnel and missions by siting, erecting and maintaining expedient shelters and associated infrastructure; rapid runway repair (RRR) to recover an airfield after enemy attack; and base recovery after attack (BRAAT), which includes the activities of airbase battle damage assessment and repair. Readiness training, as it is referred to in the context of this research, encompasses skills to perform these tasks, involving both specialized training for specific Air Force Specialty Codes, or AFSCs (individual skill specialties), as well as common training that all Prime BEEF personnel receive. Though the organization and training techniques of Prime BEEF teams have evolved over the years, their primary mission and focus remain unchanged in the modern era.

Unlike other military services, the vast majority of AFCE military personnel do not perpetually train or deploy in order to hone their contingency skills as their primary mission during peacetime, but instead fulfill a unique role. Fiscal constraints and mission requirements prohibit a totally separate military combat engineering force and civilian Air Force base maintenance force, such as the Army and Navy utilize (Cannan, 1988: 11). Thus, most Air Force bases are maintained with a mix of both military Prime BEEF and

civilian personnel, with the intention of deploying the military personnel during contingencies while the civilians are left behind as a sustaining force to maintain the base. This hybrid approach holds two key advantages: 1) cost savings by avoiding a separate military combat force with no "productive" peacetime mission; and 2) use of civilians whose experience levels and corporate knowledge of the base serve as valuable continuity and training resources for younger military personnel during their assignment to that base. In short, military personnel work full-time beside their civilian counterparts to operate and maintain the vast majority of Air Force installations.

However, it is this same structure that has also provided the commanders of these base-level engineering organizations, called the Base Civil Engineers (BCEs), a dilemma that has vexed them since the inception of the military/civilian squadron. Their challenge is this: how can the military personnel's high state of readiness be maintained when peacetime duties and taskings consume scarce readiness training time? Many of CE's peacetime taskings (base appearance, housing, environmental contract management, etc.) are completely different from their wartime responsibilities. These functions are crucial to maintaining a quality base environment in which to live and work; however, they ordinarily would not require military manpower if it were not for the personnel structure of the unit. And in some instances, time spent on these "non-combat"-related duties prevents the military from practicing their wartime skills during peacetime. This phenomenon is what then-Lt Col Cannan called the "peacetime paradox":

> Thus, what I call the 'peacetime paradox' emerges. The primary mission dictates that we prepare for war. Since our wartime force also has peacetime jobs, they must train in wartime skills outside their routine peacetime duties. The peacetime system rewards those who excel at peacetime activities, even though these activities do not contribute to wartime readiness (Cannan, 1988: 14).

This quandary of providing adequate wartime training while fulfilling peacetime obligations has been well-documented since the inception of the Prime BEEF concept (see Chapter 2 for further details) and continues to plague the BCE.

With the Cold War won, the United States has emerged as the world's sole superpower, greatly reducing the perceived need for previous levels of military personnel and equipment. The ensuing military drawdown has been significant and swift. For instance, the Air Force has lost nearly 40% of its personnel since 1986, drawing down from 608,200 to 381,100 in only 11 years, as well as a budget reduction of 36% during that same period (Mehuron, 1997: 31, 42). But America's new dominance in world affairs brings with it a commensurate sense of responsibility to help maintain peace and the new world order. As the world's watchdog, the U.S. has voluntarily shouldered numerous humanitarian and peacekeeping operations, using its military arm as policeman and nation builder. An increased operations tempo and reductions in manpower and funding are diametrically opposed, and critics are warning that this is having a draining effect on personnel morale and readiness levels. In April 1997, Representative Floyd D. Spence (R-S.C.), chairman of the House National Security Committee, released the committee's latest report, "Military Readiness 1997: Rhetoric and Reality." This scathing research report admonished the Clinton administration for "running the U.S.

forces into the ground" (Grier, 1997b: 59). The recurrent theme of this document was summed up by Representative Spence:

> Declining defense budgets, a smaller force structure, fewer personnel, and aging equipment, all in the context of an increase in the pace of operations, are stretching US military forces to the breaking point (Spence, 1997).

The problem has become so severe, that, in order to help ease the workload of flight crews, Air Force leadership has canceled numerous major exercises this year, such as Gunsmoke and Checkered Flag (Grier, 1997a: 10).

The base-level CE squadron is arguably the most diverse and heavily tasked support unit in the Air Force. During peacetime, its responsibilities are vast, ranging from maintenance and repair of the base physical plant, to acquisition and upkeep of base housing, and even environmental conservation and protection. But even more important than these functions is the wartime support mission, a linchpin in conducting successful Air Force combat operations, and the sole reason why the Air Force needs military combat engineers. As one former Director of Civil Engineering observed, "Military forces exist and can be justified only to the extent that they are required to respond to contingency operations in support of the national interest" (Gilbert, 1979: i). But the AFCE workforce has not escaped the toll of the dramatic military drawdown. CE personnel strength has been cut at levels comparable with the rest of the Air Force (approximately 40%), even though the base infrastructure they are tasked to care for has only been cut by 21%, with no further reductions in base infrastructure levels foreseen due to political unpopularity (Maze, 1997: 4). Compounding the problem is the fact that

CE officer levels are projected to be cut by another 17% and CE craftsman levels are projected to be cut an average of 23% over the next 6 years (Jordan, 1997: 3). Some of these personnel cuts are due to the trend toward outsourcing and privatizing numerous base support functions, but relinquishing these responsibilities to a contractor will entail a gradual transition over the course of several years, leaving BCEs fewer resources to maintain a fixed level of assets in the meantime.

The temptation is then to sacrifice readiness training in order to scrounge enough man-hours to fulfill the more visible peacetime tasks, despite the proclaimed priority of this training.

> With AFCE's warfighting capability dependent upon a force structure tasked with both peacetime and wartime duties, training becomes the centerpiece of the Prime BEEF concept. Despite its overriding importance, wartime training often suffers as it is forced to compete with the daily demands of the peacetime mission (Cannan, 1988: 12).

The degradation of readiness training in preference to more mundane peacetime taskings has the potential of endangering personnel readiness levels. A lack of focus on readiness training may lead to lower troop motivation and commitment, lower perception levels of their own readiness training, and a lower confidence level in both their own and their unit's readiness skills and abilities.

A CE Prime BEEF unit can be deemed "ready" for combat in various ways, including fulfilling minimum training requirements and having the minimum number of personnel qualified for world-wide mobility operations. But these methods do not take into consideration the individuals' perceptions of their readiness training and abilities,

and the confidence they have in themselves and their unit. These factors may play a crucial role in determining force readiness by communicating attitudes of those who receive the training and who are expected to perform designated contingency duties. As will be demonstrated in the next chapter, capturing trainee perceptions is valuable for a myriad of reasons, and that perceptions of task training may affect an individual's self-confidence in these tasks, which may ultimately impact their end performance.

Summary. The rapid drawdown of the military coupled with increasing criticism of its readiness levels are reminiscent of the "Hollow Force" syndrome of the 1970s following the Vietnam War. Because of its peacetime mission and structure, CE is especially vulnerable to readiness erosion as it struggles to maintain the required contingency training requirements while juggling an increasing peacetime workload with scarce resources. To help gauge current readiness levels, a measure of the current perceptions of Prime BEEF training is needed, as well as analysis of the impact these perceptions may have on task self-confidence and task execution.

Specific Problem Statement

Reduced funding and manning within the CE career field, juxtaposed with a growing responsibility of peacetime taskings and relatively greater base infrastructure levels, has increased the risk of readiness training degradation. Prime BEEF members' perception of training and confidence in their skills and abilities may be diminished, potentially weakening mission performance. The problem is therefore to measure current perception and task confidence levels of those who receive Prime BEEF readiness

training, determine if those levels are related, and investigate the factors that may affect perception and task self-confidence levels in an ultimate effort to enhance training and improve mission performance.

II. Literature Review

Before proceeding with the working principles of this thesis, it is prudent to review previous studies and literature pertaining to CE readiness training and the relationships between attitudinal measures. This chapter is split into two broad topic review areas. The first part of the literature review encompasses CE-specific issues, focusing on past training and performance highlights. First, a synopsis of previous research evaluating CE readiness levels and the Prime BEEF training program is offered. Second, a review of past real-world taskings ranging from humanitarian operations to full-scale war and CE's performance in those contingencies is given. The second part of the literature review highlights different aspects of social cognitive theory. It includes a working definition of self-confidence, a justification of the value of measuring training reaction, and a body of evidence that supports the relationships between training perception, task self-confidence, and task performance.

Prime BEEF Training

Since the inception of the Air Force's own combat engineering capability in 1964 (Kolhaas and Williams, 1980: 7), providing adequate readiness training has been a challenge. This was especially true during the post-Vietnam years, when defense dollars were drastically cut and the military was rapidly downsizing (Ashdown, 1984; Moe and Waggoner, 1985). Prime BEEF programs in the early 1970s were non-standardized and limited to the unit level, with many of the CONUS exercises consisting of "a recall of

personnel in the wee hours of the morning but little else in the way of training for a wartime scenario" (Ashdown, 1984: 84). Much of this problem can be attributed to the competition between the Army and Air Force in retaining the combat engineering support for Air Force wartime operations, and the fact that the final decision about the future of the entire Prime BEEF program was in a state of limbo, awaiting the outcome of this political battle. This dispute was finally settled by a Pentagon study, which concluded in 1978 that the Air Force should retain its own wartime engineering force (Ashdown, 1984: 88). The Air Force's Prime BEEF program was here to stay.

In the late 1970s, there began an increased emphasis on standardizing and improving readiness training, and with it came closer scrutiny on the formal Prime BEEF training programs. In a 1980 AFIT master's thesis, Captains Kolhaas and Williams surveyed (via written questionnaire) 155 Air Force CONUS and non-CONUS BCEs, CONUS CE Operations Branch Chiefs, and CONUS Prime BEEF managers about the adequacy of the Prime BEEF training program. The results of their research led them to conclude that the training was given very low priority relative to other CE work activities; that when training was given, it was not realistic; and that the Prime BEEF team training requirements were not adequate to meet the requirements of contingency and wartime taskings (Kolhaas and Williams, 1980: 99).

This finding was echoed by outside Air Force agencies. An extensive inspection of CE contingency readiness was conducted in 1981-82, and revealed that "the Prime BEEF Home Station training program was not fully preparing Prime BEEF units for their

wartime role due to varying quality and lack of realism" (Department of the Air Force, 1982).

In his 1984 AFIT master's thesis, Captain Emmitt Smith provided an in-depth and detailed analysis of the quantity of annual home station Prime BEEF training proffered, and where those man-hours were focused. He determined that the number of hours spent in training for numerous tasks varied widely between Major Commands (MAJCOMS) and bases, with apparently no universal standard of an acceptable quantity for individual tasks. He also showed that a Prime BEEF team member spent an average of 2.7% of his/her time during a work-year in home station readiness training (Smith, 1984: 147). There exists no formula that determines the quantity of time that should be spent in readiness training on an annual basis in order to be adequately trained, but the fact that so little time has been allotted certainly helps explain why readiness training has traditionally been perceived as a low priority.

In a 1985 AFIT master's thesis, Captain William Morris measured the perceived adequacy of Prime BEEF training by surveying 866 officers and mid/senior-level non-commissioned officers (NCOs). Results of the study showed that members were not sure how adequate their training was, but tended to agree that they were adequately trained (Morris, 1985: 128). In essence, this finding reveals that most personnel may not understand what constitutes adequate training or whether they have experienced it, but that they are confident and ready for anticipated contingencies. In fact, on average, members were undecided if training was adequate, if it was given the required priority, if the overnight bivouacs were realistically conducted, and if they received adequate hands-

on training to prepare them for their anticipated wartime training (Morris, 1985: 123). Perhaps this widespread uncertainty is a combination of personnel being unable to assess the adequacy of their training due to inexperience in contingency situations, and an average "middle of the road" response on the rating scale. Nevertheless, the general perception was lukewarm in assessing the overall Prime BEEF training adequacy.

Finally, in his US Army War College research report, Air Force Lt Col David Cannan explained the primary problem with Air Force CE wartime training. As mentioned earlier, the "peacetime paradox" occurs when wartime training, despite being the cornerstone of the entire Air Force Prime BEEF program, suffers as it is forced to compete with the daily demands of routine peacetime taskings (Cannan, 1988: 12). Though the focus of his report was on the increased use of Simplified Acquisition of Base Engineer Requirements (SABER) to help ease the BCE's peacetime workload, Lt Col Cannan documented the historical background and current perspectives and analysis of the struggle to allocate the required specialized wartime training man-hours despite the organizational structure and daily demands of the CE squadron.

Analysis. Sources that evaluate the Prime BEEF training program demonstrate a gradual evolution and improvement of the structure, posturing, and training of the teams. Since gaining its place as an independent, combat engineering support element of the Air Force, Prime BEEF has been tooled into a force capable of handling most anything thrown its way. But the program has not been without its problems. In every one of the sources, a dominant theme was that Prime BEEF training suffered due to a lack of emphasis, whether in time allotted, priority given, exercise realism, or amount of hands-

on exposure. Most of these reports included data and evaluation from the 1980s, when defense spending during the Cold War reached an all-time high, and when funding and personnel levels were higher while the operations tempo was lower than at present. Given the dramatic changes seen in the mission, manning and funding of the military in the years since these studies have been conducted, the time is ripe to scrutinize Prime BEEF readiness training and assess its current state.

Past CE Performance

The purpose of this portion of the literature review is to historically examine how Prime BEEF forces have performed during real world contingencies, and to determine if any shortfalls were rooted in training deficiencies. Published accounts of lessons learned from contingencies are rare, but sufficient sources were located that span the existence of the Prime BEEF program.

An analysis of CE experiences during the Vietnam War was the focus of a 1989 AFIT master's thesis by Captain Gary Lauson. One of his primary research objectives was to identify factors that would better prepare CE personnel for combat. After surveying Vietnam veterans who were in the CE career field about how preparation for combat could have been better, two of their five general response categories dealt with training: provide more realistic contingency training and provide better technical training. Overall, insufficient combat training (the type of training Prime BEEF focuses on) was the problem most frequently identified during the interviews. In concluding, Lauson states that "an evaluation is needed to determine if CE officers and NCOs are

developing skills required to satisfactorily perform their combat engineering role. The Air Force peacetime mission and organizational structure appear to discourage development of these skills" (Lauson, 1989: 123).

In one of the most realistically simulated wartime scenarios ever conducted, combat support forces were put to the test during an exercise code-named SALTY DEMO at Spangdahlem Air Base, Germany in 1985. This was a fully integrated, high tempo battle scenario that allowed all base personnel to react and interact just as they would during and after an air attack. Objectives included base recovery after attack (BRAAT), fighter sortie generation, and command and control in both chemical and conventional attack environments (Somers, 1986: 134). Civil engineers were tasked with airbase survivability and BRAAT operations, to include damage assessment, rapid runway repair (RRR), and utility repair. The outcome of this comprehensive exercise was revealing; in many of the more critical tasks such as RRR, CE demonstrated a distinct shortcoming in their ability to proficiently complete the required tasks. The deficiencies were attributed to the lack of training that incorporated similar levels of intensity, realism, and technical depth found during actual combat, with recommendations calling for more training "away from the peacetime artificialities of home bases" (Smith, 1987: 11). Ironically, this occurred at a strategically vital base in the European theater during the height of the Cold War.

The Gulf War was the biggest contingency operation since the Vietnam war, involving over half a million US troops. In late 1990, the Air Force Civil Engineer tasked Tactical Air Command to take the lead on developing a lessons-learned document

for the Air Force Engineering and Services community. When the Gulf War ended, this study was contracted out to the New Mexico Research Institute (NMRI) and, after surveying hundreds of CE and Services personnel, they published their findings in 1992. The focus of the document was on actions taken during the operation, as well as an evaluation of preparation taken prior to forces leaving their home station. What little mention there was of home station training seemed to indicate that many of the Prime BEEF teams were very unfamiliar with the contingency equipment and shelters (called HARVEST FALCON assets) and overall beddown procedures, and that some "appeared to be learning their duties in the midst of the base development" (NMRI, 1992: 45). What seemed to help the teams is that every one of them had at least a few individuals who had recently experienced a major contingency-oriented exercise (Bright Star, Readiness Challenge, etc.) and who were able to train others on beddown procedures and equipment operation. The overall finding that specifically dealt with training was that home station training needed to be more realistic and must include actual contingency equipment that is expected to be used. Another recommendation was that more personnel obtain exposure to off-base CE-specific training, such as Silver Flag at Tyndall Air Force Base, Florida, where simulated combat scenarios and realistic tasks could be experienced (NMRI, 1992: II-124).

Finally, a recent Air Command and Staff College study was conducted that examined CE training for military operations other than war (MOOTW), which encompasses peacekeeping, nation-building and humanitarian efforts. Recent examples of MOOTW that the military have been involved in are safeguarding the democratic

process in Haiti and peacekeeping in Bosnia. Major Donald Gleason set out to determine whether the tasks that Prime BEEF teams perform during these types of operations differ across the full spectrum of conflict (including war), and whether current contingency training adequately prepares them to perform this entire range of taskings, based on surveys of CE officers and senior NCOs who had led forces into MOOTW. He found that taskings for AFCE forces do not differ across the spectrum of conflict, and that the content of the AFCE contingency training program is adequately preparing Prime BEEF team personnel for the entire range of operations that they are expected to encounter (Gleason, 1997: ix). Thus, skills that CE would be expected to perform during wartime are essentially the same as would be expected in scenarios like Haiti or Bosnia, and would not require separate training. However, he did make numerous suggestions to AFCE leadership about increasing the quantity and improving the quality of contingency training in order to more fully prepare personnel for their contingency duties. He noted that current training is not meeting all the needs of AFCE Prime BEEF team personnel, with specific recommendations to increase the training audience, modify the focus of current training, and increase the number of areas of training (Gleason, 1997: 36).

Analysis. First and foremost, it should be noted that in this portion of the literature review, no CE unit was found to have failed to perform its required mission in a contingency scenario. Civil engineers enjoy a long standing reputation of getting the job done despite logistical, operational or other situational shortfalls. But throughout Prime BEEF's history, training weaknesses have impeded the mission to varying degrees in nearly every documented instance of wartime or MOOTW deployments. There will

always be somewhat of a learning curve on equipment and procedures when personnel arrive at a deployment location. But these researchers emphasize that much of this learning process should have been more fully completed at their home station, not when they hit the ground in contingency operations. In an effort to keep pace with the rapidly changing landscape of warfare, the Air Force laid out as one of its six critical capabilities the core competency of Agile Combat Support (Dudney, 1997: 24). The Pentagon's latest Quadrennial Defense Review (QDR) also underscored the need for forces to have the ability to quickly switch gears from peacetime operations to all-out war (Tirpak, 1997: 45). With the future of military deployments relying more heavily on faster, smaller forces on short notice, time to casually prepare for and execute contingency missions is increasingly a rarity. The commander of the air campaign during Desert Storm, musing about the many weeks it took to amass our forces in Saudi Arabia, stated that Saddam Hussein "and other potential aggressors learned a valuable lesson: don't give America six months" (Horner, 1996: 52).

Definition of Confidence

Much research has been conducted on measuring and explaining an individual's self-confidence and its associated effects. Self-confidence is multi-faceted and can be analyzed numerous ways, but the focus of this research is task self-confidence (a sub-component of overall self-esteem), which is the degree of self-confidence held when accomplishing specific work tasks (Badin and Greenhaus, 1974: 722). Yet another related term that has been coined just in the past decade that is closely related to this task

self-confidence is self-efficacy. Self-efficacy can be broadly defined as "beliefs in one's capabilities to mobilize the motivation, cognitive resources, and course of action needed to meet given situation demands" (Wood and Bandura, 1989: 408), or more narrowly as "a person's belief in their capability to perform a particular task" (Silver et al, 1995: 286). "While self-efficacy is a *judgment* about task-specific capability, self-esteem generally is considered to be a *trait* reflecting an individual's characteristic, affective evaluation of the self (i.e. feelings of self-worth or self-liking)" (Gist et al, 1991: 838). Because their meanings have become nearly synonymous in related literature over the past decade, the term "task self-confidence" has been gradually replaced with self-efficacy (Gist and Mitchell, 1992: 185). The terms self-confidence and self-efficacy will be used to the exclusion of other similar terms in the remainder of this work, referring to the narrow definition of confidence held in accomplishing specific tasks, also described by a sense of competence wherein can be found "the constellation of skills and abilities contributing to the successful performance of an occupational or work role" (Steel et al, 1989: 434). The tasks referred to in this context are those specific tasks that are required in contingency settings, and which are prepared for with Prime BEEF readiness training. Individual tasks will vary primarily by AFSC and rank, so that different personnel are responsible for different tasks in accordance with their skill specialty and grade.

Although the terms task self-confidence and self-efficacy mean essentially the same thing, they involve different methods of quantitatively measuring their levels. Self-efficacy is usually measured by asking the individual to score themselves on some interval scale on how well they think they can perform a particular task, while task self-

confidence is traditionally measured by asking more general qualitative questions about their level of confidence in performing tasks. Nevertheless, the goal of both styles of measurement is to gauge levels of task-specific self-confidence. In this work, task self-confidence and self-efficacy are operationally defined as the same construct, although task self-confidence will be measured using general statements only.

Analysis. The field of study of self-confidence and related concepts is diverse, and carries many similar terms. For the remainder of this research, the terms self-confidence and self-efficacy will be used to mean the confidence an individual has in their ability to accomplish specific Prime BEEF readiness tasks.

The Training Reaction/Confidence Relationship

The evaluation of a training program's effectiveness is crucial (Goldstein, 1986; Wexley and Latham, 1981). Organizations somehow must be able to verify that training is having the desired effect in order to justify the expenditures for that training, confirm that employees learn the required material, and ensure that performance will be enhanced as a direct result of that training. Perhaps the most well-known training evaluation tool has been Kirkpatrick's Model (Kirkpatrick, 1979: 79), shown in Figure 2.1. Its first step is to measure the reaction of the trainees, in order to determine how they felt about the training program and whether it fulfilled their expectations.

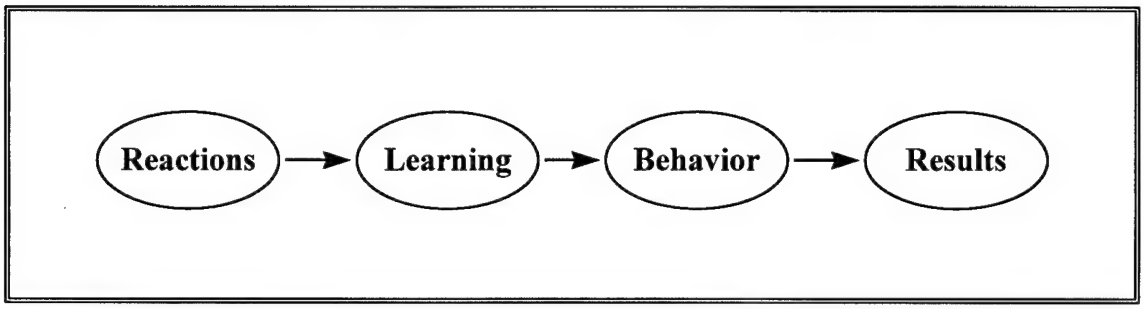

Figure 2.1: Kirkpatrick's Training Evaluation Model

These attitudinal measures can set the tone of the entire training experience, as opinions of training have been shown to have some influence on the amount of learning that may or may not take place (Ostroff, 1991: 372).

Another study noted that perceptions are determinants of attitude, and that perceptions also give educators valuable feedback about the quality and effectiveness of training (Morris, 1985: 5). Thus, evaluation of the perceptions and attitudes that Prime BEEF members hold regarding their training helps educators to design appropriate training, as well as provides a barometer of the current perceived state of the readiness training program.

It has also been shown that reaction to training is significantly correlated to the motivation trainees have in their training (Mathieu et al, 1992: 839). In this frame of reference, trainee reaction is synonymous with how the training is perceived (Mathieu et al, 1992: 829). Individuals who have a low perception level of their overall training quality tend to be less motivated to participate in their training. Another research effort that examined numerous training reaction studies found that utility-type reactions to training (operationalized by asking questions that ascertain perceived utility-value on

subsequent task performance, which are the same type of questions used in this research) had a significant correlation with immediate learning of that skill and permanent training transfer, and which predicted performance (Alliger, 1997: 349).

Despite the wealth of studies affirming the value of reactions to training, only one could be located that specifically examined the effect that trainee reaction has on self-efficacy. In a 1991 study, researchers investigated how perceptions of training can influence the development of self-efficacy (Tannenbaum et al, 1991: 759). They found that training which induces a positive impression and fulfills employee expectations is likely to increase self-efficacy, as well as enhance training motivation and commitment to the organization (Tannenbaum et al, 1991: 759).

Analysis. The value of assessing trainee reactions has been well-documented, since they can help predict trainee attitudes and motivation, impact the amount of learning that takes place, and provide an indication of training effectiveness. Research that shows a direct relationship between training perception and self-confidence is scarce, with one study demonstrating that training which is well-perceived produces increased task self-confidence.

The Confidence/Performance Relationship

Numerous studies have shown the relationship between task-oriented self-competence and job performance. A study by Friedman and Goodman demonstrated that subjects' perception of their qualifications related positively to production (Friedman and Goodman, 1967). Other researchers have also shown that task self-confidence shapes

task performance (Korman, 1970; Badin and Greenhaus, 1974; Wagner and Morse, 1975; Morse, 1976; Tharenou and Harker, 1984). An exhaustive review of previous self-confidence research noted that the task-specific aspect of self-confidence had proven to be a better predictor of job performance than global self-esteem (Tharenou, 1979). In essence, how well individuals perform a certain task depends not so much on their overall self-competence and feelings of self-worth, but rather on the confidence they possess in executing that specific task.

Much research has been conducted in the past decade about the effects of self-efficacy on performance. Using several styles of study and in different research frameworks, numerous studies indicate that an increase in self-efficacy results in attendant increases in performance (Gist et al, 1989, 1991; Mitchell et al, 1994; Harrison et al, 1997; Silver et al, 1995; Lindsley et al, 1995; Bandura, 1986). This body of research, in addition to other related studies, has focused on the cause and effect relationship of self-efficacy and performance, demonstrating that increases in task self-confidence directly enhances performance.

It can be argued that the task self-confidence/performance relationship is a two-way street, such that successful task performance increases self-efficacy. This "chicken and the egg" argument has not gone unnoticed in the literature. Some of the studies acknowledge this bi-directional relationship (Harrison et al, 1997: 85; George, 1994: 395; Silver et al, 1995: 296), while only one study could be located that directly addresses it. A group of researchers proposed that the relationship between self-efficacy and performance is a result of reciprocal causation that creates a spiral effect, such that

performance affects self-efficacy, which affects performance, and so on (Lindsley et al, 1995: 645). This cyclic nature of the self-efficacy/performance relationship can continue such that the variables alternate as cause and effect until a pattern is developed in a positive or negative direction. Thus, the spiral can progress upward, downward, or remain in a self-correcting pattern. An example of a negative spiral would be a loss in task self-confidence leading to a slight decrease in performance, which in turn slightly reduces task self-confidence, and so on. A self-correcting cycle would be one where an analysis of performance would allow the individual to adjust future efforts in order to increase or reduce performance and/or self-efficacy (Lindsley, 1995: 650). These bi-directional relationships are very complex and can be influenced by numerous external and internal factors. But suffice it to say that an increase or decrease in self-efficacy may begin a chain of self-amplifying events such that a downward trend of both task self-confidence and performance is experienced.

Informal interviews with instructors and students confirm the idea that self-efficacy directly influences task performance. After their training was completed, students at the CE Silver Flag Training Site at Tyndall Air Force Base, Florida, were asked if they would be better able to perform their anticipated wartime duties. The consensus was that their task-specific confidence had significantly improved following training (training that they unanimously reacted positively to), and correspondingly they expected their performance on contingency tasks to improve. Instructors also verified this phenomenon, noting that those who display higher task-confidence consistently perform the task more proficiently (Smith et al, 1997).

Organizational performance can also be related to the combined sum of individual senses of confidence. Lorsch showed that organizations that were considered to be high-performing had a mean individual self-confidence score that was significantly higher than a low-performing organization. Employees of low-performing organizations tend to have lower self-confidence ratings, and also tend to think less of their organization than those in high-performing organizations (Lorsch, 1974).

Analysis. Despite the numerous approaches and variables found in self-efficacy studies, all are unanimous in their general findings that a higher level of task self-confidence leads to better performance and is a good predictor of ultimate task performance. If an individual has a high degree of confidence in their ability to perform certain tasks, then they will tend to display a correspondingly higher performance level. Lower-performing organizations have lower-confidence individuals who seem to be aware of their organization's shortcomings. And to the extent that group performance is a direct result of the orchestrated efforts of individuals, self-efficacy is crucial to any study that attempts to explain group performance (Riggs and Knight, 1994: 764). In short, there is ample evidence that perceptions about task self-ability and confidence in one's organization directly impact both individual and organizational overall performance.

Summary

Past research indicates that despite its reputation as one of the world's premiere combat engineer forces, Prime BEEF has always struggled with ensuring its forces are adequately trained. Forced to compete for resources with the daily CE operational mission, the vast majority of deficiencies cited during real-world contingencies have been rooted in training shortfalls. Despite CE's admirable track record, there is much room for improvement of the Prime BEEF training program, to ensure that it adequately prepares military personnel for the types of contingency skills that will be required on even shorter notice than in past operations.

The first general lesson from the organizational behavior portion of the literature review is that trainee perceptions are critical data to those who design, administer and evaluate the training. The second lesson is that at least one study confirmed that training perception is a predictor of self-efficacy on tasks taught during that training. The third lesson is that research indicates that professed confidence levels tend to affect task performance in a corresponding direction. While the literature supports these three premises, it is noticeably devoid of any studies that attempt to synthesize these three seemingly disjointed ideas into one holistic model.

III. Research Focus

This chapter focuses on the purpose and value of the research effort, and succinctly states the research objectives. Using results of the literature review, a model that guides the thesis is crafted and presented. Next, the specific research objectives are clearly defined. Finally, both the merit and limitations of the research is presented.

Model Formulation

The review of the literature confirmed the importance of measuring training perception levels, as shown in Figure 3.1.

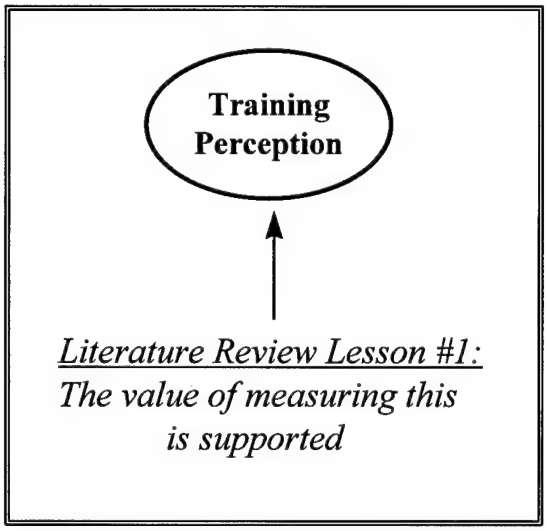

Figure 3.1: Literature Review Lesson #1

The literature also validated that there is a positive and directional correlation between perception of training and task self-confidence, portrayed in Figure 3.2.

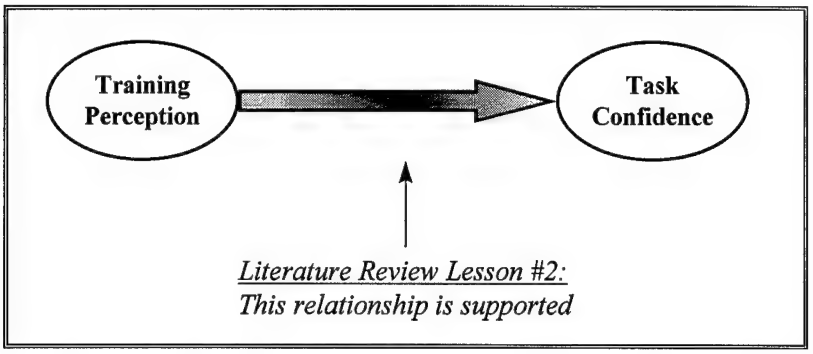

Figure 3.2: Literature Review Lesson #2

Finally, the literature review also provided evidence supporting the relationship between task confidence and task performance, shown below in Figure 3.3.

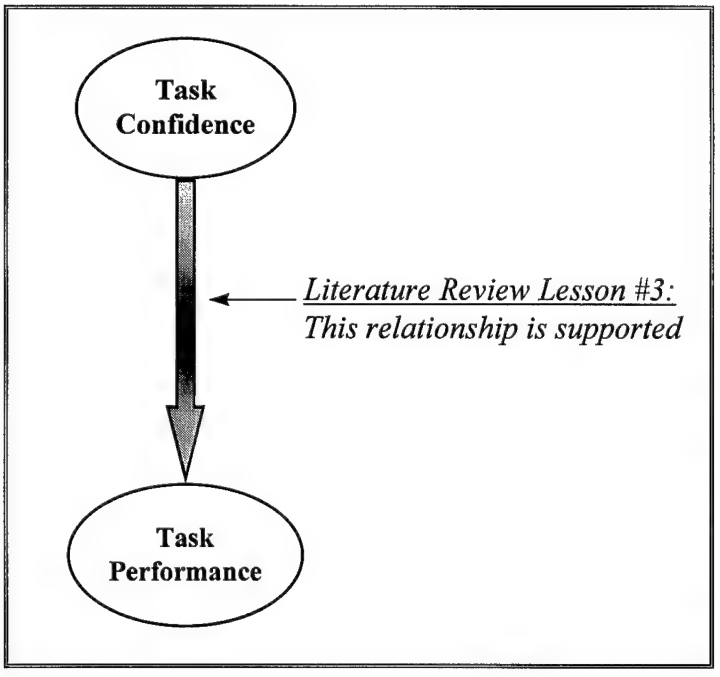

Figure 3.3: Literature Review Lesson #3

By projecting these three concepts into a Prime BEEF training setting, a heuristic model (labeled herein the Perception-Confidence-Performance (PCP) model) can be developed that proposes relationships among the constructs of perception of training, task confidence and task performance (Figure 3.4).

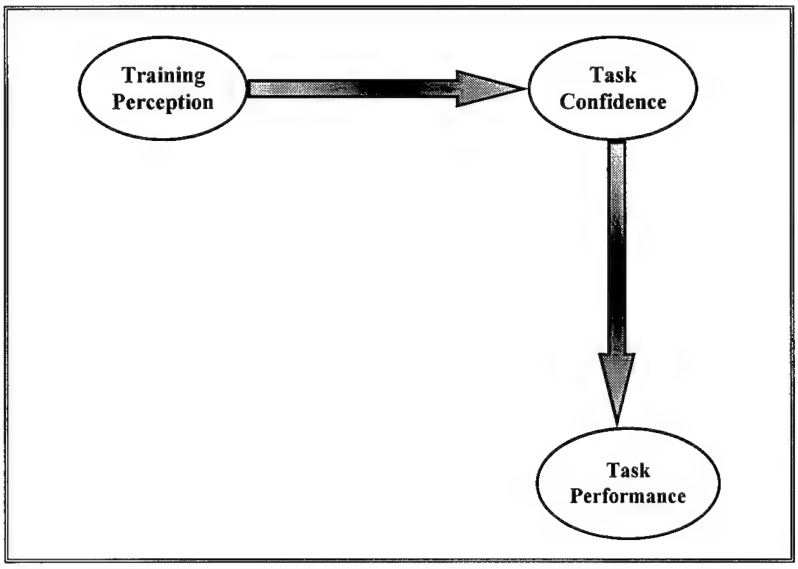

Figure 3.4: Perception-Confidence-Performance (PCP) Model

The model is not designed as a comprehensive, all-inclusive taxonomy that considers all variables and fully explains all aspects of each of the relationships or constructs. Rather, it frames the research objectives in a pragmatic, graphic manner, providing a roadmap for the thesis and the general hypothesis that an individual's perception of their training may ultimately impact their end performance. Expressed in mathematical terms, this model postulates that if A affects B, and B affects C, then A may ultimately affect C.

Objectives of Thesis

Research Objective #1. This thesis will measure the current perception levels of base-level CE Prime BEEF troops regarding their readiness training and the confidence they have in themselves and their unit. The cornerstone of this research will be a written survey, designed to measure four core perception levels by asking survey respondents these types of questions:

1. What is your perception of the quality of the readiness training you receive?
2. What is your perception of the quantity of the readiness training you receive?
3. What is your confidence level in your own wartime skills and abilities?
4. What is your confidence level in your unit and their wartime readiness?

Research Objective #2. This thesis will determine if there is a correlation between perception of readiness training and readiness task confidence. Using the data collected from Research Objective #1, a correlational analysis will be performed to test the strength of the relationship between these two general constructs.

Research Objective #3. This thesis will determine which, if any, aspects of training (i.e. priority, realism, hands-on, etc.) tend to predict levels of self-confidence or confidence in the unit.

Research Objective #4. This thesis will determine which, if any, demographic variables (i.e. rank, experience level, etc.) tend to predict perception levels of readiness training and/or confidence, and if there are significant differences in mean perception levels between certain groups (differences between officers and enlisted, flights, AFSCs, etc.).

The research objectives can be depicted graphically via the PCP model, shown below:

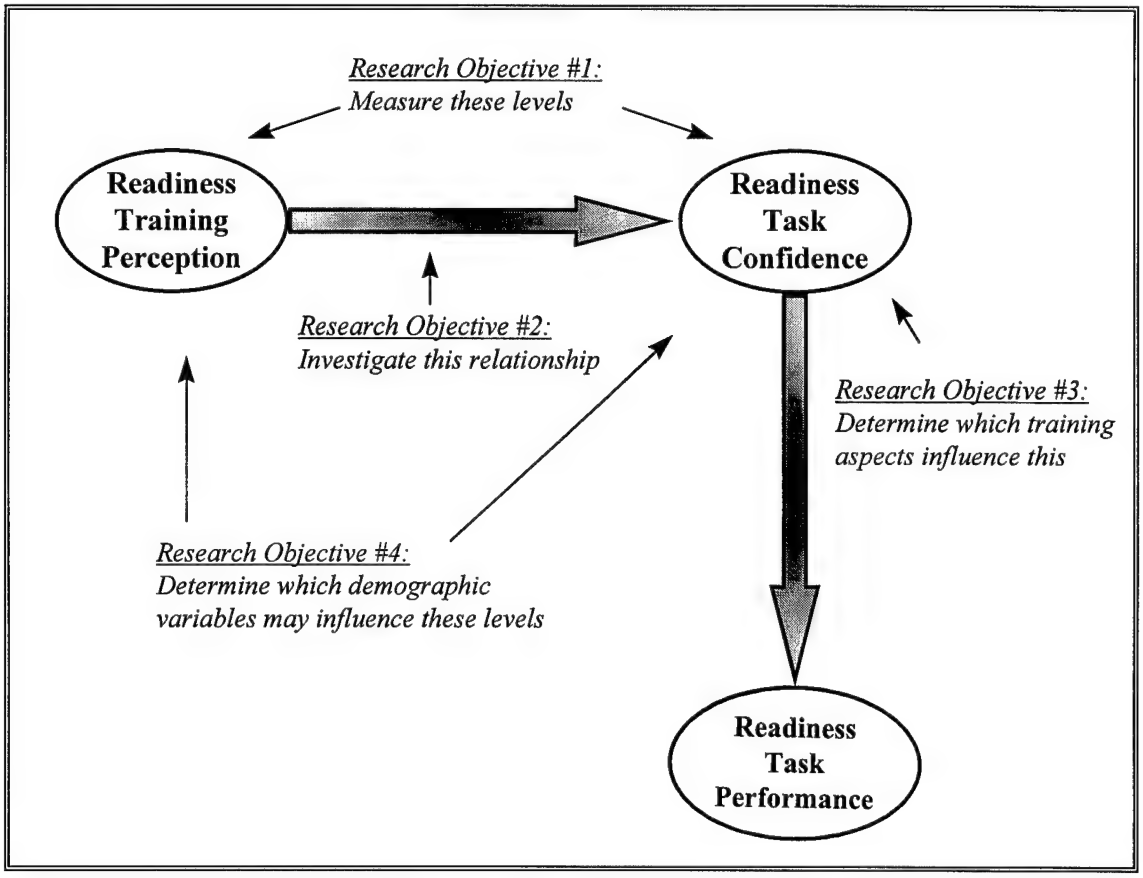

Figure 3.5: Graphical Representation of Research Objectives Using the PCP Model

Research Value

Measuring perceptions of training is a fundamental tool of educators to determine whether the training is having the desired effect. If individuals are dissatisfied with aspects of the training (quality, quantity, focus, etc.), its effectiveness may be dampened. Attitude may also suffer, as well as motivation to participate in the training. By

measuring perceptions of readiness training, immediate feedback can be given to those who design training to gauge whether changes are needed. Senior CE leadership will also be able to assess how the recent drawdown and increased workload of the force have impacted members' perception of their readiness training.

Precisely predicting individual or unit performance under the rigors of combat is impossible, but pinpointing factors that ultimately may enhance or degrade performance under such conditions is crucial to those who design training and to those who evaluate readiness. An investigation of these factors and their relationship to confidence and performance is merited, and lays the foundation for further research in this critical topic.

Scope and Limitations

This study focuses on the perceptions of active-duty, Continental United States (CONUS)-based CE Prime BEEF personnel. It excludes Fire Protection and Explosive Ordnance (EOD) personnel, due to their unique peacetime missions and training regimes. This study is cross-sectional, in that data were collected at a single point in time across the population.

This effort does not attempt to evaluate the current Prime BEEF program or those responsible for administering it. Rather, it is a current measurement of the perceived state of readiness from the field, from those personnel who receive readiness training and who will be responsible for carrying out required contingency duties. Demographic data and potential relationship catalysts will be analyzed in an attempt to explain the cause and strength of respondent perceptions.

Because the survey measures personal perceptions and opinions, individual responses will understandably vary, hinging upon factors such as personality, opinion of quantity/quality of training required to be proficient, and personal experiences with the Prime BEEF program. A large sample size that closely resembles the population should minimize this variance. This study is cross-sectional, in that it provides a snapshot in time of current perceptions. As such, perceptions are dated, and will be considered to be applicable only as long as the reader believes them to be. It is also more difficult to determine causal relationships between variables in a cross-sectional study. But because time restrictions did not allow for a longitudinal analysis, and the fact that the majority of similar studies are cross-sectional, this limitation is deemed rather minor. Finally, the study focuses on a military engineering population, which, due to its unique attributes and occupational mission, may yield slightly different results than what would be gleaned from other populations.

IV. Method

Overview

This chapter describes the methods used to fulfill the stated research objectives in Chapter 3. Specifically, this chapter will describe the overall data collection plan, justify the use of a survey, and discuss the development and evaluation of that instrument. Next, the target population and associated sampling plan for the survey instrument will be described. Finally, methods for the processing and analysis of the data will be discussed.

Data Collection

Because the research objective is to measure individual perception levels, the data were generated from those individuals in the appropriate target population, and collected through attitudinal surveys. This instrument provided the qualitative information in the form of individual perceptions, as well as demographic information describing the characteristics and backgrounds of the respondents. This survey was administered in the form of a written questionnaire, mailed out to entire Prime BEEF lead and follow teams at eight selected bases and completed by each member of those teams. The survey answer sheets were then mailed back to be analyzed using statistical computer software.

Secondary sources of information and data are the literature review, training observation, and selected personal interviews. The sources listed in the literature review serve to shape the thesis effort, providing background and supporting documentation that

help frame and crystallize the research objectives. Training observation was accomplished by a one-week visit to CE's CONUS readiness training site, Silver Flag at Tyndall AFB, Florida. This enabled the author to participate in and observe training first-hand, collecting both scientific and anecdotal information from those who administer and receive training. Finally, personal interviews were conducted with experienced individuals whose expertise contributed to this specific study.

Survey Justification

A survey was required since the necessary information was not available from any other source; the data simply did not exist. Only one study has been conducted that resembles the current effort (Morris, 1985); however, that data does not describe current perception levels, nor do the questions adequately capture the information required to fulfill the stated research objectives. A new survey tailored to the effort at hand was needed in order to gain current information about individual perception levels of readiness training and confidence, as well as demographic characteristics.

Mailed surveys were selected over other alternatives (personal interviews, phone polls, etc.) for reasons best described in the survey literature (Henerson, 1978: 29):

1. They permit anonymity, increasing the probability of receiving responses that genuinely represent an individual's beliefs or feelings.

2. They permit the respondent more time to think about their answers before responding, improving accuracy.

3. Surveys provide ease of administration (given to more people simultaneously, covers a larger geographical area, etc.).

4. They minimize the cost per unit of data gathered.

5. Surveys can be administered uniformly, so that each person responds to exactly the same questions.

6. Surveys facilitate ease of analyzing and interpreting the written responses, eliminating survey bias.

Instrument Development

Format. The primary purpose of the written survey was to measure the four core perception levels listed in Research Objective #1. Thus the instrument contained statements that attempted to elicit attitudinal data by allowing individuals to express their opinions on certain subjects (the actual survey is provided as Appendix A). Simply asking opinions in an open-ended fashion makes interpreting the data very difficult, due to the range of the possible responses that may not be comparable. Instead, applying a scale to the survey ensures uniformity and eases data analysis. The Likert scale, named for its creator, is a powerful yet simple way to gain coded, comparable data by asking respondents the degree to which they agree or disagree with statements (Alreck and Settle, 116: 1995). These statements represent particular opinions, and respondents indicate their agreement or disagreement with these statements, enabling the survey researcher to capture the entire range of possible responses with a few discrete categories, and facilitating the composition and analysis of the data. This instrument used the Likert scale, with respondents choosing one of five options ranging from "strongly disagree" to "strongly agree" to express their opinion.

The statements that were used could not be worded neutrally, but rather were worded in the affirmative or negative, so that the respondent had a corresponding level of agreement or disagreement. This was to prevent the "yaysayer" and "naysayer" effect (the respondent agrees or disagrees with the positively and negatively worded statements, respectively); thus, a mixture of both types of statements were used to measure perception in each separate construct category in order to limit this potential bias.

There were two main sections to the questionnaire. The questions about demographics were asked first in order to get the participants in the right frame of mind, "easing" them into the survey by asking simple, close-ended questions about themselves. The second section consisted of statements about various aspects of readiness training, with the respondents providing a response based on the extent to which they disagree or agree with that statement. Answers were marked on computer Scantron sheets (AFIT Form 11c) to maximize efficiency and accuracy of data processing and analysis.

Finally, the survey was designed and coordinated in accordance with Air Force Instruction (AFI) 36-2601, which provides further guidance about the survey structure, including the questionnaire package, format, question style, and response scales (Department of the Air Force, 1995). The entire survey package was sent to the Headquarters Air Force Personnel Center (AFPC) Survey Branch for evaluation and approval. The package included the survey cover letter and survey, background information justifying its need, details about what the data was to be used for, and a sampling plan outlining who it was to be administered to. After minor format and syntax

modifications, it was approved for use and given an Air Force Survey Control Number (SCN 97-47).

Content. The first section of the survey consisted of twelve demographic questions, used to help categorize respondents by background, occupation, and other personal factors. Questions 1 and 12 also serve as screening tools to eliminate respondents who may not be qualified to assess their unit's readiness training program. The demographic information was used as variables for correlational analysis between different constructs and the four core perception levels. All demographic information was not used during this particular research effort, but was collected for potential future use in related studies.

The second section of the survey consisted of 28 statements, designed to elicit opinions about both the quantity and quality of the readiness training respondents receive, and their confidence in both their own and their unit's wartime skills and abilities. In essence, there are 14 pairs of statements, each half-pair worded one way in the affirmative, with a corresponding statement worded slightly differently using negative semantics. Table 4.1 lists the constructs being measured, the associated survey questions, and the general type of question being asked.

Table 4.1: Instrument Construct Measurement Description

Core Perception (Construct)	Survey Statement # (+,-)	What the Survey Statements Attempt to Measure
Quantity of Training	13, 28	Am I getting enough training?
	27*, 14	Is my unit getting enough training?
Quality of Training	15, 29	Is the training realistic?
	16, 30	Is the training effective?
	31*, 17	Is the training adequate?
	33, 18	Is the training appropriate?
	19, 32*	Does the training have the correct priority?
	34, 20	Does the training have enough hands-on?
	40, 21	Overall, am I satisfied with my training?
Self-Confidence	22*, 36	Does the training I receive give me confidence?
	35, 23	Am I confident in my contingency skills?
	24, 38	Am I confident I can do anything required?
Confidence in Unit	37, 25	Am I confident that my unit is ready right now?
	39, 26	Am I confident our squadron is fully prepared?

*Statements 22, 27, 31 and 32 are worded nearly exactly as they were in a previous similar survey (Morris, 1985). A comparison will be made between the previous data and the responses from this research in order to determine the extent to which these four perception levels have changed or remain the same over the past 12 years.

Pilot Study

The instrument was tested on 24 officers and enlisted TDY personnel taking a Maintenance Engineering course at the AFIT Civil Engineer and Services School. The purpose of this pilot study was to estimate the statistical reliability of the survey measures, as well as to gain feedback about the survey format, ensure clarity of wording, and to test the software that reads and analyzes the computerized data sheets. All respondents were members of the ultimate target population, and volunteered to participate in an anonymous pilot test. Pilot test respondents did ask for clarification on a few of the written statements, which resulted in a modification of those statements to ensure they were worded clearly. Finally, the respondents' answer sheets were successfully processed with the computerized tools, verifying that both hardware and software worked correctly.

Reliability can be defined as "the extent to which an experiment, test, or any measuring procedure yields the same results on repeated trials" (Carmines and Zeller, 1979: 11). A reliable survey is one that produces consistent results during repeated measurements of the same construct. Reliability can be estimated using a statistical procedure called Cronbach's alpha, which provides a measure of an instrument's internal consistency (Carmines and Zeller, 1979: 44). Cronbach's alpha values range from 0 (no reliability) to 1.0 (complete reliability). Using Statistical Analysis System (SAS) computer software that utilizes this method on the pilot test data, Cronbach's alpha for each set of scales ranged between 0.77 and 0.86, with an overall Cronbach coefficient alpha of 0.80. Thus, the instrument appeared to have an acceptable degree of reliability.

Population

Research Objective #1 is to gain information about perceptions of readiness training and individual/unit training confidence within the CE career field. The general population of interest is civil engineers assigned to Prime BEEF teams and who receive readiness training.

Segments of this population were excluded for various reasons. Only CONUS forces were surveyed, since non-CONUS installations have unique missions requiring training regimes and operation tempos different than what is found at a "normal" stateside base. Firefighters and Explosive Ordnance Disposal (EOD) personnel, although assigned to Prime BEEF teams, were also excluded due to their exclusive peacetime mission of training full-time. Thus, the population consisted of all CONUS-based CE military personnel (with the exception of fire protection and EOD) who are assigned to a Prime BEEF lead or follow team. There are approximately 4,800 personnel within this population.

Sampling Plan

A representative sample of the entire population was surveyed in order to quickly and economically allow generalization to the population as a whole. Because the goal of the sample was to closely resemble a cross-section of the population, a representative number of respondents assigned to each MAJCOM were selected. Instead of selecting a random sample of individuals in the population, entire Prime BEEF teams at eight bases were chosen, for the following reasons:

1. Ease of administration: Only eight packages were required to be sent out, instead of hundreds

2. Cost savings: Postage costs were greatly reduced

3. Delegation: A base POC can administer and track dozens of surveys

4. Improved response rate: A higher return rate is likely with entire squadron participation

5. Data enhancement: Information about entire team perceptions is valuable to both unit leadership and this research

This sampling method, coupled with standard-size Prime BEEF lead and follow teams (108 and 49, respectively, excluding those specialties mentioned) posed a challenge in developing a sampling plan that closely resembled the breakout of the entire population. Table 4.2 shows the proposed parent and sample populations as a function of MAJCOM.

Table 4.2: Proposed MAJCOM Sampling Plan

MAJCOM	Population (# / % of Total)	Sampled (# / % of Total)
ACC	2,061 / 43%	373 / 40%
AMC	1,178 / 25%	265 / 28%
AFMC	520 / 11%	157 / 17%
AFSPC	490 / 10%	98 / 10%
AETC	255 / 5%	49 / 5%
Other	304 / 6%	0 / 0%
Total	*4,808 / 100%*	*942 / 100%*
Total Proposed Sampling Rate = 20%		

In order to encourage cooperation from units, an agreement was made with the BCEs that the eight base identities would be kept confidential, with unit results released to the individual squadrons upon request. Table 4.3 shows miscellaneous sampling plan information that demonstrates other factors taken into consideration. Bases with flying missions are defined as those with operational wings who have aircraft participating in a contingency mission. These bases fall under the MAJCOMs ACC or AMC. All bases with other types of primary missions (depot maintenance, training, space operations, etc.) fall under the MAJCOMs AFMC, AFSPC, and AETC. Large bases are defined as having more than 500 civil engineering personnel (both military and civilian) assigned. Finally, Prime BEEF follow teams are smaller groups that augment the larger lead teams after the lead teams have been deployed and have established initial operations.

Table 4.3: Miscellaneous Category Sampling Statistics

Category	Population (# / % of Total)	Sampled (# / % of Total)	# Personnel Sampled in Category
Bases w/Flying Missions	29 / 60%	5 / 17%	638
Bases w/Non-Flying Missions	19 / 40%	3 / 16%	304
Large Bases	25 / 52%	4 / 16%	569
Small Bases	23 / 48%	4 / 17%	373
Prime BEEF Lead Teams	30 / 48%	6 / 20%	648
Prime BEEF Follow Teams	32 /52%	6 / 19%	294

Survey Response

This section reports the number of surveys returned, and highlights demographic information about the sample in order to provide a sketch of the backgrounds and experience levels of the survey participants.

Description of Participation. Table 4.4 summarizes the response rate, and how many surveys were ultimately used in the analysis. There were 27 surveys discarded due to several unanswered questions, while another 27 were unused since the respondent was an airman basic, airman, or second lieutenant with less than six months in the military, rendering them unable (in the opinion of the author) to adequately assess the quality of their readiness training. An additional five surveys were discarded since the last question was unanswered (meaning the respondent probably unknowingly skipped a question). Finally, an additional 20 surveys were given to officers attending Silver Flag in order to capture a unique perspective from these young officers and to bolster the number of surveys given in the officer category. The total survey return rate from the eight bases was 72%, a high rate due in part to surveying entire units versus sending individual surveys across the Air Force. The return rate undoubtedly would have been higher if it were not for the amount of personnel who were on temporary duty (TDY) or on leave. With a total net sample size of 637 out a population of approximately 4,800, a final net sampling rate of 13% was realized.

Table 4.4: Survey Participation Results

Total # Surveys Mailed	***942***
Total # Surveys Returned	676
Unusable Surveys	(27)
"Ineligible" Survey Respondents	(27)
Surveys Missing Last Question Response	(5)
Silver Flag Respondents	20
Total Net Sample Size	***637***
Initial Sampling Rate	20%
Total Survey Return Rate	72%
Net Population Sampling Rate	***13%***

Eight entire base Prime BEEF teams were sampled, along with randomly selected Silver Flag participants. Table 4.5 shows the organizational breakdown of survey participants.

Table 4.5: Participation by Organization

Organization	**# Bases Surveyed**	**# Surveys Returned (# / % of total)**
ACC	3	230 / 36%
AMC	2	170 / 27%
AFMC	1	92 / 14%
AFSPC	1	84 / 13%
AETC	1	41 / 7%
Silver Flag	1	20 / 3%

Respondent Demographics. This section highlights the results of the first part of the survey (Questions 1-12), summarizing demographic factors that serve to describe the characteristics and background of the participants. Since the sample is a true representative cross section of the desired population, the data presented here also approximates what would be found in a typical CE squadron. All data excludes those respondents whose inputs were not used in the analysis. More detailed descriptive statistics may be found in Appendix B.

The vast majority of survey respondents were enlisted personnel, as shown in Table 4.6. Nearly three-quarters of the officers that responded were lieutenants, as shown in Table 4.7, with 18 of them surveyed at Silver Flag. Fifty-one company-grade officers and eight field-grade officers responded to the survey.

Table 4.6: Officer/Enlisted Response Size

Category	# Responses	Sample %
Officers	59	9%
Enlisted	578	91%

Table 4.7: Officer Response Breakdown

Rank	# Responses	Officer %	Total Sample %
2Lt	24	41%	4%
1Lt	19	32%	3%
Capt	8	14%	1%
Maj	6	10%	1%
Lt Col	2	3%	0.3%
Col	0	0%	0%

Table 4.8 shows the enlisted response breakout. Over half of the enlisted responses consist of senior airmen and staff sergeants, the backbone of the CE workforce. 298 airmen, 225 NCOs, and 59 senior NCOs responded to the survey.

Table 4.8: Enlisted Response Breakdown

Rank	# Responses	Enlisted %	Total Sample %
AB	1	0.2%	0.2%
Amn	28	5%	4%
A1C	111	19%	17%
SrA	158	27%	25%
SSgt	154	27%	24%
TSgt	71	12%	11%
MSgt	47	8%	7%
SMSgt	10	2%	2%
CMSgt	2	0.3%	0.3%

Table 4.9 breaks down all survey respondents by their Air Force Specialty Code (AFSC). The first AFSC listed is for all officers combined; the remainder of the AFSCs are for enlisted personnel. Miscellaneous AFSCs in the "Other" category may include, but are not limited to: Force Management (3E6x1), Inventory Management (2S0x1), and First Sergeant (8F000).

Table 4.9: Responses by AFSC

AFSC	# Responses	Sample %
Officer (32Exx)	59	9%
Electrical Sys. (3E0x1)	76	12%
HVAC/Refrig. (3E1x1)	93	15%
Pavements/Equip. (3E2x1)	69	11%
Structural (3E3x1)	85	13%
Utility Systems (3E4x1)	68	11%
Power Production (3E0x2)	49	8%
Engineering (3E5x1)	47	7%
Readiness/Dis. Prep. (3E9x1)	27	4%
Liquid Fuels (3E4x2)	13	2%
Pest Management (3E4x3)	16	3%
Environmental Mgmt. (3E4x3)	3	0.4%
Other	32	5%

Table 4.10 shows the respondents' educational backgrounds. 73 of the respondents hold engineering degrees, while 40 hold other types of bachelor degrees. Eighteen percent of the sample holds at least a bachelor degree.

Table 4.10: Responses by Bachelor Degree Held

Bachelor Degree Held	# Responses	Sample %
None Held	524	82%
Civil Engineering	35	6%
Mechanical Engineering	13	2%
Electrical Engineering	9	1%
Architect/Architectural Engineering	5	1%
Other Engineering	11	2%
Other	40	6%

Table 4.11 shows how many respondents are in each flight found in a CE squadron. As expected, the majority of the respondents are assigned to the Operations Flight, with the Engineering Flight as the next largest flight category. Respondents who listed the "Other" category may be assigned to, but not limited to, the administration or command sections of the squadron.

Table 4.11: Responses by CE Flight

CE Flight	# Responses	Sample %
Operations	385	60%
Engineering	123	19%
Readiness	37	6%
Environmental	12	2%
Resources	6	1%
Housing	4	1%
Other	66	11%

Figure 4.1 breaks out the average number of hours per month that respondents personally spend in readiness training. Assuming a 40-hour work week, the majority of personnel surveyed (76%) spend 5% or less of their duty time in readiness training.

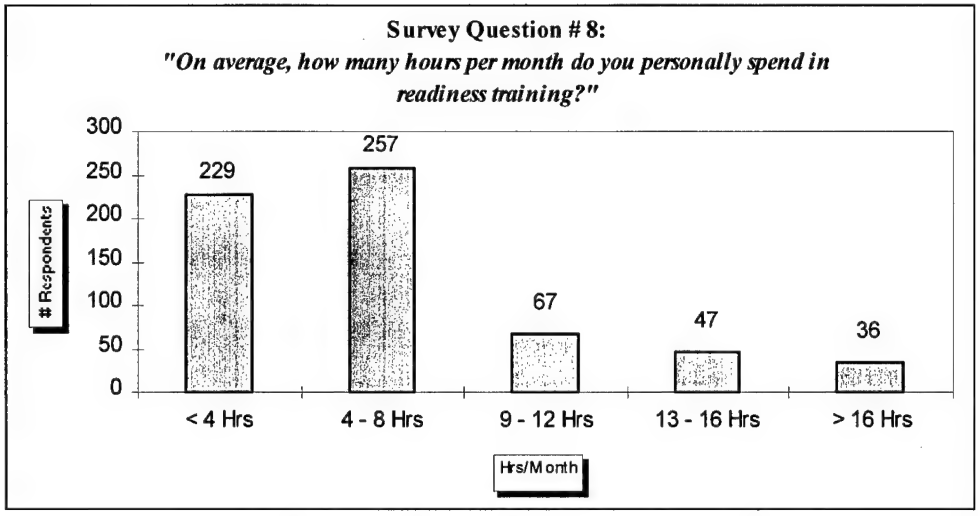

Figure 4.1: Hours Per Month Spent In Readiness Training

In order to gauge how much "practice" respondents get on contingency tasks during their peacetime duties, survey Question #9 was asked. Figure 4.2 shows that most CE personnel (59%) attribute 20% or less of their day-to-day duties as being similar to tasks they would perform during a contingency.

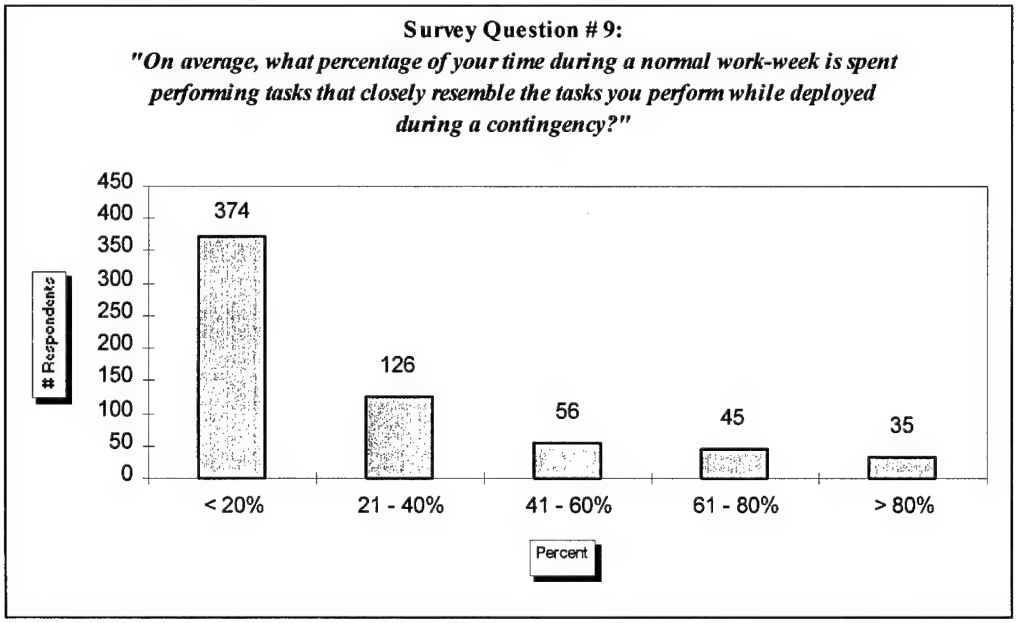

Figure 4.2: Percentage of Time Spent Performing Contingency-Similar Tasks

Survey Questions #10 and #11 were designed to measure respondents' experience levels. Figure 4.3 shows that over two-thirds of the respondents have some deployment experience, while Figure 4.4 shows that most have not been deployed in the past year.

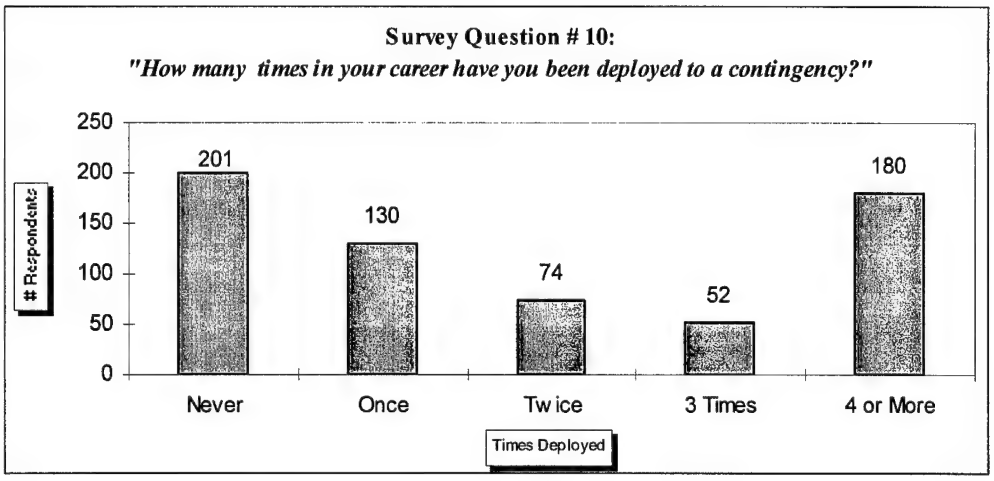

Figure 4.3: Deployment Experience

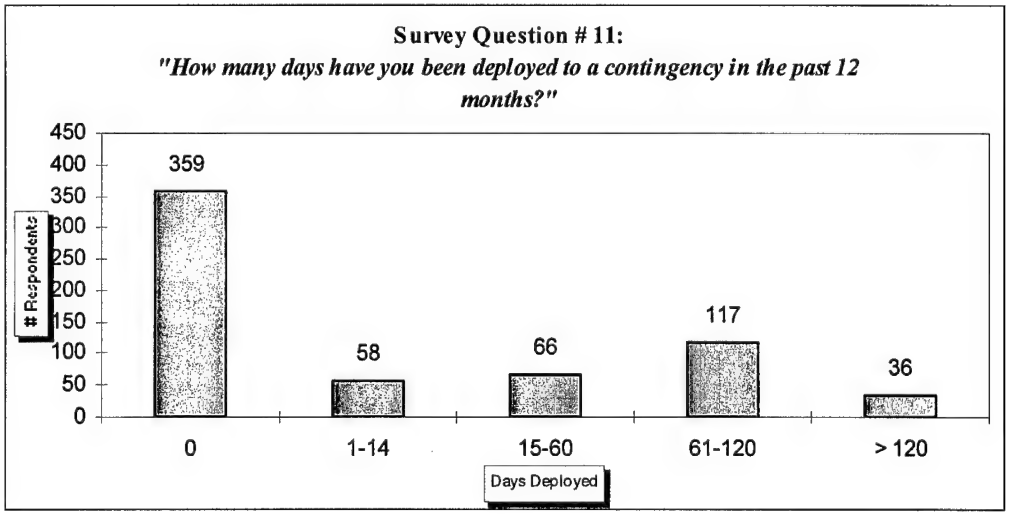

Figure 4.4: Days Deployed In The Past Year

Finally, in order to help measure respondents' qualifications to make judgments about their unit, they were asked how long they have been assigned to their squadron. Figure 4.5 shows that nearly all personnel have been in their current unit for at least six months. All surveys received from those in the rank of airman basic, airman, or second lieutenant who had been at their unit for less than six months were not used in this analysis.

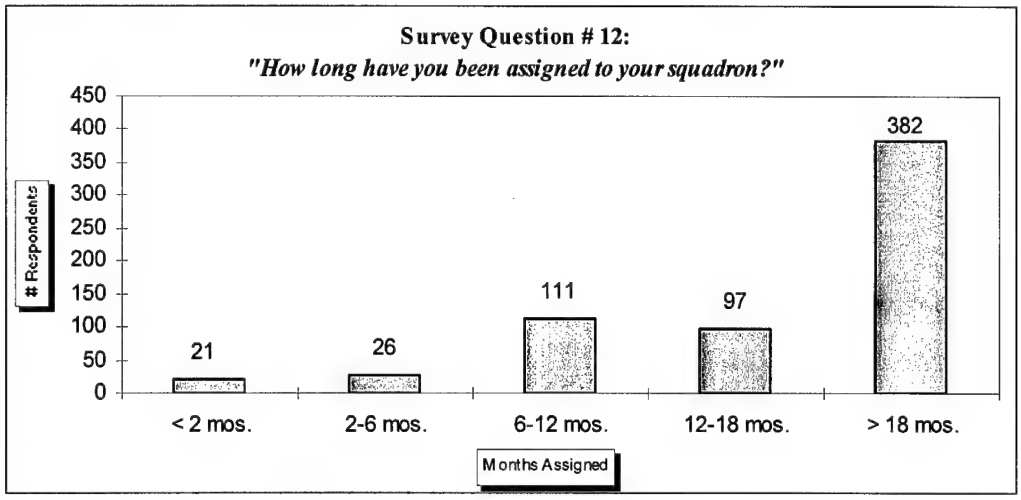

Figure 4.5: Months Assigned to Unit

Likert Scale Statements

The second part of the survey (Questions 13-40) elicited opinions from the respondents about their perceptions of readiness training and the confidence they have in themselves and their unit. Results for the specific constructs measured were scored with a Likert Scale score (see Table 4.12).

Table 4.12: Likert Score Scale

	Strongly Disagree	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Strongly Agree**
Likert Scale Score	1	2	3	4	5

Results were scored as follows:

1. Each construct was measured by one or more pairs of survey statements. Each pair contained one positively worded statement and one negatively worded statement.
2. The responses to the negatively worded statements were reverse-scored so that both statements were given a positively scaled Likert scale score.
3. The two scores for that pair were added and divided by two, resulting in a mean Likert scale score for that construct.

An example of this procedure is follows:

1. Two statements are given that are designed to measure a specific construct, such as the perception of quantity of training. One statement is worded positively, while the other is worded negatively. The respondent is asked the extent to which they agree or disagree with those statements. They respond by agreeing (Likert scale score=4) and disagreeing (Likert scale score=2) with the positively and negatively worded statements, respectively.
2. The negatively worded statement's score is reverse scored, converting that score from a 2 to a 4. In essence, the respondent has scored a 4 on two separate positively worded statements.
3. The two scores are averaged, yielding a construct score of 4. In essence, this means the respondent agreed with both positively worded statements about the quantity of training they receive.

Analysis Strategy

Data was scanned off the computerized answer sheets using a Scantron reader, and the numerical data was stored on disk in a data file. Using a statistical program called SAS, software code was written and used to process and analyze the data. Two different levels of examination were used on the data. The first was the use of descriptive statistics, which served to fulfill Research Objective #1, providing simple measures that show the frequency of responses for each of the survey questions, as well as the mean perception levels of the quality and quantity of readiness training, and personal and unit

confidence. Descriptive statistics generated included the frequency of the responses, and the Likert scale response mean and standard deviation for each statement. Because the statements were both positively and negatively worded, the negatively worded statement responses were reverse scored so that a uniform scale would be used. With the descriptive statistics, demographic variables can be "counted" and categorized, and the average responses for each statement pair (positive and negative) and for the overall measurement can be demonstrated. These results fulfill the primary research objectives of determining the perception levels of civil engineers about their readiness training and confidence levels.

The second level went beyond reporting perception levels and average response scores, and began to attempt to explain the relationship between constructs, and the possible predictors of perception levels or the training perception and confidence link. They consist of correlation analysis and simple comparison between groups to detect significant differences in mean responses, fulfilling Research Objectives #2, #3 and #4. In order to investigate the strength of relationships between various constructs, correlational analysis is necessary. Using a predefined procedure, SAS calculates the Pearson product-moment correlations and the associated statistical significance. The Pearson product-moment correlation r measures the relationship between two variables, taking on values between -1 (perfect negative correlation) and +1 (perfect positive correlation) (Fink, 1985: 82). Though a high degree of correlation does not necessarily signify causality, it is a strong argument that a relationship exists between the two variables. A 0.05 level of significance was applied.

V. Results and Analysis

This chapter presents the descriptive statistics and correlational analysis results of the Likert scale survey statements. Only highlights of the data are given, while a more detailed analysis and discussion is offered in Chapter 6. Expanded descriptive statistics for each question are provided in Appendix B.

Perception Levels

Quality of Training. Quality of training was treated as being composed of several facets, each equally important. The specific constructs that are being measured and their associated survey statement numbers can be found in Table 4.1 (Chapter 4). Each of these aspects of quality of training were measured with two survey statements. Results for these constructs are shown below in Table 5.1 (scores are on a Likert scale between one and five; see Table 4.12 for explanation):

Table 5.1: Aspects of Training Quality Results

Aspects of Training Quality	Mean Likert Scale Score
Realistic	3.00
Effective	3.67
Adequate	3.21
Appropriate	3.40
Prioritized	3.20
Hands-On	2.46

Training effectiveness received the highest score, while the hands-on aspect of training stood alone as the lowest-scored perceived aspect of training quality.

Quantity of Training. Member's perceptions of training quantity were measured, which included both the quantity of training that they personally receive as well as the quantity their unit receives. Two statements measured the perception level of each of these constructs, with the results shown below in Table 5.2.

Table 5.2: Quantity of Training Results

Aspect of Quantity of Training	Mean Likert Scale Score
Personal Quantity	3.10
Unit Quantity	3.14

Overall Perception. In order to assess the perception level of the overall quality of readiness training received, two different measures were taken. The first is a combined average score of all those aspects of training shown in Table 5.1 ("Combined Factors"). The second is an average score of two statements specifically asking about the perception of overall training ("Stated Overall"). Results in Table 5.3 show a nearly equal average score of these two definitions of overall training. This validates the aspects of training in Table 5.1 as a reasonable list of the elements that comprise overall training quality.

Table 5.3: Overall Training Perception Results

Aspect of Overall Perception	Mean Likert Scale Score
Combined Factors	3.16
Stated Overall	3.03

Confidence in Self. A total of six statements were used in order to assess members' confidence in their ability to perform readiness tasks. The resulting average score is shown below in Table 5.4.

Table 5.4: Self-Confidence Results

Aspect of Confidence	Mean Likert Scale Score
Personal Confidence	3.64

Confidence in Unit. In a similar fashion, the confidence that members have in their unit's ability to perform required contingency tasks was measured by analyzing four statements. Results are shown below in Table 5.5.

Table 5.5: Unit Confidence Results

Aspect of Confidence	Mean Likert Scale Score
Unit Confidence	3.48

Comparison With Previous Survey Results. A comparison of the results of four specific questions was made with nearly identical questions (scored on the same Likert scale) asked on a similar survey twelve years ago (Morris, 1985: 135). Respondent mean scores from the current research and the previous survey are shown in Figure 5.1. Shown in order are the mean responses from both groups to the current survey statements #27, #31, #32, and #22.

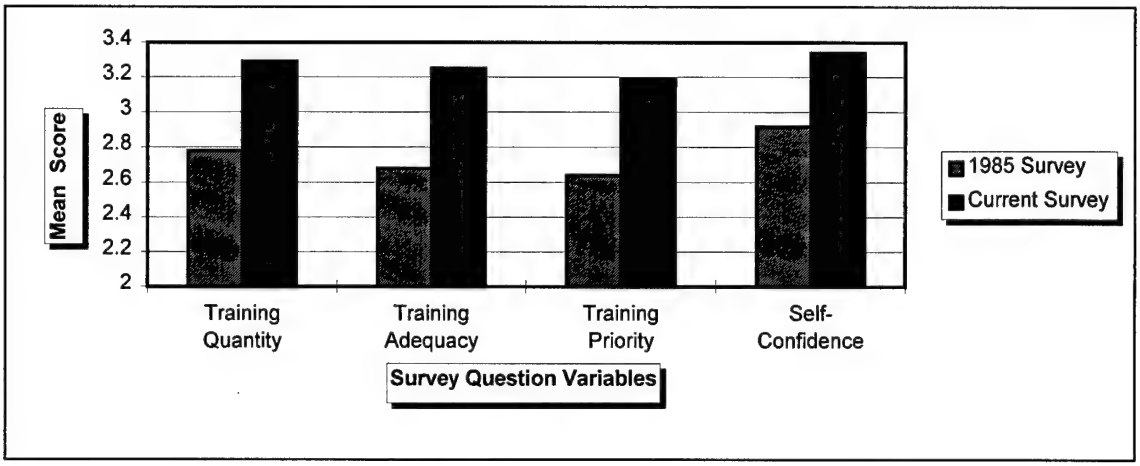

Figure 5.1: Comparison of Selected Question Results to Previous Survey Results

This cursory comparison shows that respondents to the current survey provided noticeably higher mean ratings on all four questions than did the respondents of twelve years ago.

Correlation Between Training Perception and Confidence

Pearson product moment correlations were calculated to assess the strength of the relationship between of perception of readiness training and professed task confidence. Before those correlation values are given, a brief definition of each of the variables used in the analysis are given below. The scores referenced in these definitions are the Likert scale scores found in Tables 5.1-5.5:

1. Overall Quality of Training: Respondents' score when asked about their overall perception of the quality of the readiness training they receive.
2. Combined Quality of Training: Respondents' combined score of the six aspects composing quality of readiness training (see Table 5.1).

3. Quantity of Personal Training: Respondents' score when asked about the quantity of readiness training they personally receive.
4. Quantity of Unit Training: Respondents' score when asked about the quantity of readiness training their unit receives.
5. Combined Quantity and Quality: The average score between #3 and #4 above, averaged with the #2 variable above, to give a composite score that represents the perception of the quality and quantity of readiness training received.
6. Personal Confidence: Respondents' score of professed confidence in their own ability to perform required contingency tasks.
7. Unit Confidence: Respondents' score of professed confidence in their unit's readiness and ability to perform required contingency tasks.

Table 5.6: Correlations Between Readiness Training Perception and Confidence

Variable	1.	2.	3.	4.	5.	6.	7.
1. Overall Quality of Training	1.00						
2. Combined Quality of Training	.73	1.00					
3. Quantity of Personal Training	.61	.67	1.00				
4. Quantity of Unit Training	.40	.47	.51	1.00			
5. Combined Quantity & Quality	.71	.89	.85	.77	1.00		
6. Personal Confidence	.37	.51	.47	.27	.51	1.00	
7. Unit Confidence	.48	.57	.40	.42	.57	.44	1.00
	($p < .0001$) for all coefficients						

To interpret these results, consider the following example. The correlation coefficient between the variables Personal Confidence (#6) and Quantity of Personal Training (#4) is 0.47, significant at $p < .0001$. That is to say that there is only one chance in ten thousand that one would obtain a value of 0.47 or larger if there was absolutely no relationship between these two variables. Said another way, the probability of getting this high of a correlation simply by chance is one in ten thousand. Typically, a significance test of $p < .05$ is an acceptable cutoff in most social science studies; however, the much higher significance level used in this test strengthens the case that a relationship exists between the variables.

All variables were positively correlated, indicating that as the scores on one variable rose, the scores on the other variable rose as well. For instance, one of the strongest correlations (.47) was between personal confidence and the perception of the quantity of training personally received; the higher the perception of personal confidence, the higher the perception of the quantity of training.

All correlations were found to be highly (statistically) significant. Some of the stronger correlations, such as those associated with the variable Combined Quality and Quantity, have larger values because their scores include other variable scores. For instance, one of the subscores that contributes to the score for the variable Combined Quality and Quantity comes from the variable Combined Quality of Training; thus their correlation coefficient (.89) is expected to be quite strong. The relationships between independent variables that were found to be among the strongest were the correlation

between confidence levels in both self and unit, and the combined perceptions of overall quality of training (r = .57 and .51, respectively).

Another result that should be pointed out is that some of the highest relationships are between the perception of training quantity given to the unit and personal task confidence (r = .42), and between the perception of training quantity given personally and personal task confidence (r = .47).

The weakest relationship supported by these correlation coefficients is that between the perception of the quantity of unit training and personal confidence (r = .27).

Correlation Between Training Perception, Confidence and Aspects of Training Quality

Table 5.7 shows the correlations between the variables representing perceptions of overall training, confidence, and the six aspects of training quality mentioned in Table 5.1. The variables representing the six aspects of training quality are defined below using the types of questions associated with their measure.

8. Training Realism: Is the training realistic?
9. Training Effectiveness: Is the training effective?
10. Training Adequacy: Is the training adequate?
11. Training Appropriateness: Is the training appropriate?
12. Training Priority: Does the training have the correct priority?
13. Hands-On Training: Does the training have adequate hands-on?

The top portion of the correlation matrix (the first 7 variables) is identical to Table 5.6. The variables defined above have been incorporated to measure their interrelationship with training perception and confidence.

Table 5.7: Correlation Between Perception of Training/Confidence and Aspects of Training Quality

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Overall Quality of Training	1.00												
2. Combined Quality of Training	.73	1.00											
3. Quantity of Personal Training	.61	.67	1.00										
4. Quantity of Unit Training	.40	.47	.51	1.00									
5. Combined Quantity & Quality	.71	.89	.85	.77	1.00								
6. Personal Confidence	.37	.51	.47	.27	.51	1.00							
7. Unit Confidence	.48	.57	.40	.42	.57	.44	1.00						
8. Training Realism	.53	.72	.40	.27	.59	.22	.36	1.00					
9. Training Effectiveness	.28	.56	.39	.18	.47	.60	.34	.22	1.00				
10. Training Adequacy	.71	.84	.59	.39	.75	.41	.52	.51	.41	1.00			
11. Training Appropriateness	.48	.73	.42	.27	.60	.37	.40	.53	.33	.57	1.00		
12. Training Priority	.47	.65	.48	.53	.68	.29	.46	.34	.22	.50	.34	1.00	
13. Hands-On Training	.55	.61	.49	.28	.56	.22	.24	.34	.15	.46	.28	.26	1.00
	($p < .0001$) for all coefficients												

As expected, all aspects of training (variables 8-13) had high correlation coefficients with the variable Combined Quality of Training, since their combined scores completely comprise that variable. With the exception of Training Effectiveness, all aspects of training also demonstrated high correlations with the variable Overall Quality of Training, adding strength to the assumption that variables 1 and 2 are essentially the same measures.

The perception of the Quantity of Training (for both self and unit) had the closest relationship to Training Adequacy and Training Priority, which intuitively makes sense. Personal and Unit Confidence were most strongly related to Training Effectiveness and Training Adequacy out of all the aspects of training quality.

An interesting observation is that Personal Confidence had the weakest correlation coefficient with Training Realism and Hands-On Training, aspects of training quality that have traditionally been lacking in the Prime BEEF program. This may be related to the fact that the correlations between Training Effectiveness and the variables Realistic Training and Hands-On Training are fairly small ($r = .22$ and $r = .15$, respectively).

Correlation Between Training Perception, Confidence and Demographic Variables

Table 5.8 shows the correlations between training perception, confidence, and the demographic variables. Correlational analysis could not be performed on all demographic variables (AFSC, degree, etc.) because the response selection for each question must be scaled on an interval level, either ascending or descending. Asking how many hours per month spent in readiness training allows the respondent to choose their answer along an interval scale and permits correlational analysis, while choosing their AFSC from a list does not. The first seven variables of the matrix are again the same as Table 5.6, with the demographic variables included for the correlational analysis.

Table 5.8: Correlations Between Training Perception/Confidence and Demographic Variables

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Overall Quality of Training	1.00												
2. Combined Quality of Training	.73***	1.00											
3. Quantity of Personal Training	.61***	.67***	1.00										
4. Quantity of Unit Training	.40***	.47***	.51***	1.00									
5. Combined Quantity & Quality	.71***	.89***	.85***	.77***	1.00								
6. Personal Confidence	.37***	.51***	.47***	.27***	.51***	1.00							
7. Unit Confidence	.48***	.57***	.40***	.42***	.57***	.44***	1.00						
8. Deployment Experience	.006	.07	.06	-.014	.05	.26***	.03	1.00					
9. # Days Deployed in Past Year	.02	-.01	.0072	.0041	-.001	.13**	.09*	.48***	1.00				
10. # Hrs/Month Spent in Training	.21***	.15**	.17***	.13**	.18***	.13**	.08*	.08*	.04	1.00			
11. % of Time Spent During Duty	.17***	.19***	.17***	.14**	.20***	.16***	.14**	.13**	.06	.20***	1.00		
12. Lower Rank (E-1 through E-6)	-.18***	-.13**	-.17***	-.23***	-.20***	.10**	-.02	.23***	.02	-.04	-.08*	1.00	
13. Length of Time Assigned to Unit	-.006	.0007	.05	-.05	-.002	.08*	.05	.22***	.21***	.04	.05	.13**	1.00
	*** = ($p < .0001$) ** = ($p < .01$) * = ($p < .05$)												

Several points of interest should be noted from this correlation matrix. First, deployment experience, over both career and the past year, showed no correlation with either perceptions of training or confidence levels. The notable exception was that those who have been deployed more in the past year tend to have a higher level of personal confidence ($r = .13$, $p < .01$).

Although the number of hours spent every month in readiness training shows fair correlation to personal and unit confidence levels, the percentage of time spent performing tasks during peacetime that resemble contingency tasks yields higher correlation coefficients to personal and unit confidence levels ($r = .16$ and $r = .14$, respectively).

Most of the correlation coefficients associated with the variable Lower Rank were negative, meaning that as the individual's rank went up, perceptions of training quality and quantity, as well as confidence in self and unit, tended to decline.

Finally, the length of time assigned to their current unit showed no appreciable correlation with any of the variables dealing with training perception or confidence.

Analysis of Differences Between Group Means

T-Test. An independent-samples t-test was performed on the officer and enlisted mean scores for training perception and confidence. These were the only groups that could be analyzed via t-test, as it was the only demographic category that had only two variables. The t-test results indicated a measurable difference between the scores of officer and enlisted personnel. Figure 5.2 shows a comparison between officer and

enlisted mean scores for selected overall perceptions, followed by an explanation of the variables used in the comparison:

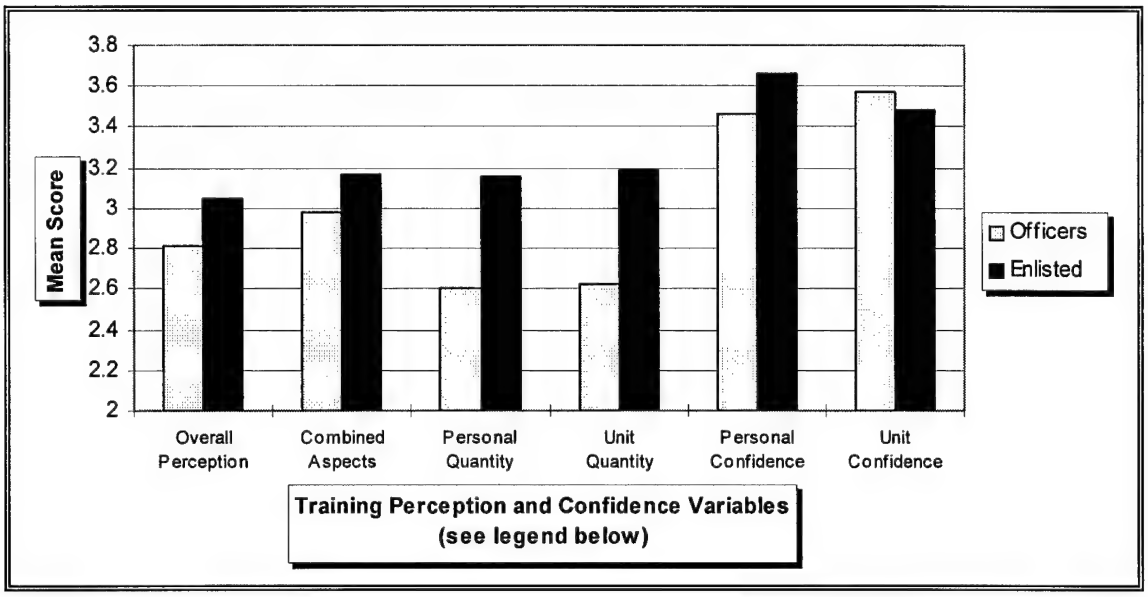

Figure 5.2: Comparison of Officer and Enlisted Overall Perceptions

1. Overall Perception: Respondents' score when asked about their overall perception of the readiness training they receive.
2. Combined Aspects: Respondents' combined score of the six aspects composing quality of readiness training (see Table 5.1).
3. Personal Quantity: Respondents' score when asked about the quantity of readiness training they personally receive.

4. Unit Quantity: Respondents' score when asked about the quantity of readiness their unit receives.
5. Personal Confidence: Respondents' score of professed confidence in their own ability to perform required contingency tasks.
6. Unit Confidence: Respondents' score of professed confidence in their unit's readiness and ability to perform required contingency tasks.

Results of the independent-samples t-test indicated that there were significant differences between the first five variables listed (all but Unit Confidence), at $p < .05$ significance. In all of these cases, enlisted perceptions exceeded officer perceptions, most noticeably the perception differences of the quantity of training provided both to the respondent and to the unit. Although there was no significant difference between officers and enlisted in levels of unit confidence, it remained the sole category where mean officer scores exceeded mean enlisted scores.

Analysis of Variance (ANOVA). All other differences between groups were explored using a one-way ANOVA, which measured statistically significant differences in means between three or more groups. The same variables that were compared in the t-test between the groups of officers and enlisted were also compared between the groups containing different missions (flying vs. nonflying), MAJCOMS, AFSCs, degrees, and flights. Tukey's studentized range test was used as a post-hoc test to pinpoint the differences between the specific means, if they did indeed exist. All comparisons were made at the $p < .05$ significance level.

The results of the ANOVA procedures revealed that there were no significant differences in overall perception of training or in confidence levels between any of the groups. For instance, there were no differences between MAJCOMs in their mean perception of the quality of readiness training received, nor were there any differences in personal confidence between those respondents assigned to bases with flying missions and those assigned to bases with non-flying missions. Also, there was no significant differences between officers who held different academic degrees (i.e. mechanical engineering, civil engineering, etc.). The fact that there is no difference in perceptions between those with differing degrees verifies the findings in a previous thesis effort that examined the perceived competence of junior civil engineering officers (Wilson, 1985: 57). The only significant difference was between the officer AFSCs and most enlisted AFSCs, which was explained earlier by the t-test analysis.

VI. Discussion and Conclusion

Research Objective #1: Perception Level Measures

Results in the descriptive statistics of perceptions of readiness training showed a mediocre response from participants when asked about the quality and quantity of the readiness training they receive. When asked about specific aspects of the quality of their training, the lowest scores were given to the facets of hands-on and realism in the training experience. These aspects of training quality have traditionally been very challenging, with similar surveys in the past showing comparable perception ratings (Morris, 1985: 106, 112; Kolhaas and Williams, 1980: 45, 94). Areas of readiness training that received the highest scores were training appropriateness and effectiveness. Respondents tend to believe that the training that they do receive is worthwhile and applicable to tasks they expect to perform during a contingency. These higher relative scores also indicate that the training does seem to ensure that trainees know exactly what responsibilities they are accountable for during a contingency.

Mean ratings of training quantity were also mediocre, barely registering a three on the five-point Likert scale. Perceptions of training quantity for both the individual and the unit were nearly identical, possibly indicating that respondents believed that training time for both were equally important and interrelated.

The six aspects of quality mentioned above were found to be a reasonable list comprising overall quality, as shown by the nearly identical mean scores in Table 5.3; respondents' composite score of these aspects were roughly equal to their overall

perception of the quality of their training. Scores representing respondents' perception of the overall training they received also fell just above the middle of the Likert scale, indicating a somewhat lukewarm overall response to the training they receive.

Despite overall scores falling near the middle of the Likert scale, one noticeable highlight is that a comparison of results to a similar survey twelve years ago reveal that certain perceptions are notably higher in all tested categories (Figure 5.1). Respondents have higher mean perceptions of training quantity (unit), adequacy, priority and ability of training to provide self-confidence than was exhibited in 1985.

Perceptions of both self and unit task confidence scored significantly higher than almost all measures of quality and quantity of training. It was expected that individuals would display a higher task confidence in their unit than in themselves alone. However, the results showed the exact opposite; the mean self-confidence score was higher than the score of confidence in unit.

Research Objective #2: Correlational Analysis Between Training Perception and Confidence

Results of the correlational analysis showed a highly significant correlation between perception of readiness training and task confidence in both self and unit. As respondents' opinion of training increased, their task confidence in their own abilities and in the abilities of their unit also increased. This finding lends credence to the importance of the reaction to training by trainees that Kirkpatrick emphasized almost 40 years ago (Kirkpatrick, 1979). Though the correlational analysis provided no indication of whether higher training perception was the cause or effect of higher task confidence, it did support

the fact that a strong relationship exists between those two constructs, lending credibility to the previous study which indicated that a positive training reaction tends to increase task self-confidence (Tannenbaum et al, 1991). Training that is effective and accomplishes its intended purpose is an obvious goal. But as the survey results indicate, there is a strong relationship between self-confidence in abilities and the perception of training, which reinforces how critical it is to measure and evaluate trainee opinions of the training they receive. It is likely that no matter how well-intentioned the training is, if participants have qualms about aspects of their training experience, it may personally affect their self-confidence in carrying out those tasks.

Research Objective #3: Correlational Analysis Between Training Aspects and Confidence

Certain aspects of training tended to have a stronger relationship with respondent perceptions than others. Respondents who scored quantity of training higher (both personal and unit) also tended to score training adequacy and training priority higher. This may indicate that the term adequacy was more often interpreted as a quantitative measure ("Was it enough?") rather than its intended definition of a qualitative measure ("Was it good enough?"). Respondents also tended to associate whether they felt they received enough training with the priority they perceived it was given during day-to-day operations.

Participants with higher levels of self and unit confidence also tended to have a more positive opinion of the effectiveness of the training they received. This implies that a strongly related factor to task self-confidence is simply knowing what task/s will be

expected to be performed. Training that does not clearly specify roles and fails to delineate task responsibilities tends to be associated with lower task self-confidence measures.

One surprising finding is that, although the aspects of realism and hands-on in training are strongly correlated to the overall perception of training received, they have a much weaker correlation to personal confidence. Thus, although respondents rank training realism and hands-on lower than other aspects when assessing overall training, these aspects played a much smaller role in their relationship with task self-confidence than did aspects such as training effectiveness and adequacy.

Research Objective #4: Correlational Analysis Between Demographic Factors and Perception Levels

Results of the correlational analysis showed that few demographic factors held any relationship to perceptions of training and confidence. A notable exception was that the percentage of time an individual spends in the course of a normal duty day performing tasks which are similar to those expected to be performed during a contingency seemed to be positively related to attitudes about training and levels of self and unit task confidence. Those who spend more time performing these tasks as part of their "normal" day in general were more satisfied with their training, and held higher levels of self and unit confidence.

Another interesting result was the tendency of rank at the lower level to predict trends in perception level of readiness training. There was moderate negative correlation between rank and perception of training, such that the higher ranking NCOs tended to

think less of their training, and tended to have lower confidence levels than their more junior counterparts. This difference may be due to the more experienced senior personnel having a more complete understanding of what training is necessary to fulfill mission requirements than the junior personnel who have been deployed less, and who may have a false impression of what constitutes adequate training. If this is the case, the training perception may be artificially high due to the bulk of the respondents consisting of these less-experienced junior NCOs. This possibility remains unconfirmed, and lends itself to a closer examination in future research.

Finally, results of the t-test and ANOVA analysis indicated that the only significant difference in training perception and confidence levels between specific groups was that between officers and enlisted. Overall, officers displayed significantly lower mean scores on perception of training quality and quantity, as well as readiness task confidence levels in unit and in self. This finding is consistent with previous research (Morris, 1985: 127), where the proposed explanation was given that age and experience level differences between officers and enlisted may contribute to the difference between scores. However, this seems to conflict with the current finding discussed earlier that lower-ranking enlisted personnel have higher perceptions of training and confidence levels than higher-ranking enlisted personnel. A more plausible explanation may be the differences between officer and enlisted peacetime duties and formal training programs. Table B.1 (Appendix B) shows that officers tend to spend a smaller proportion of their time during the course of their daily routine executing tasks that are similar to those they would be responsible for during a contingency. Thus,

enlisted personnel typically get to "practice" more on contingency-related skills than do officers. Related to this distinction is the difference in the formal training programs officers and enlisted experience. Enlisted personnel have long had formalized training programs that outline specific skill proficiency requirements and training standards, providing a roadmap for career progression and attainment of duty designations (apprentice, journeyman, craftsman, etc.). Now called Career Field Education and Training Plans (CFETPs), a similar document for officers has been fielded only in the past year. Officers have traditionally been reliant on more general guidance for career progression advice, but a formal system similar to what enlisted personnel experience has been lacking. Because a greater average proportion of these skills are used in both peacetime and contingencies by enlisted than by officers, enlisted may be more apt to feel that a portion of their readiness task training is duplicated in their formal peacetime program. Officers, on the other hand, may feel a greater need for training dedicated to readiness tasks, since they are less likely to be exposed to it otherwise.

Conclusions and Recommendations

Despite the cursory conclusion that training perceptions have increased over the past twelve years, they remain below ideal levels and continue to represent a mediocre opinion of current readiness training. As a result of the literature review and data from the surveys, the PCP model is believed to be a useful framework that underscores the importance of collecting and assessing attitudinal responses about readiness training, due

to their anticipated impact on task self-confidence, and ultimately end performance. As a result of this research, three primary recommendations are offered:

1. Accompany the military drawdown with an increased effort to monitor and assess Prime BEEF readiness training perceptions for the numerous reasons outlined in this research.
2. Strive to continuously improve readiness training in an effort to raise training perception levels, which have been shown to enhance both task confidence and end performance. Major Don Gleason recently made numerous such recommendations, which are repeated and endorsed here (Gleason, 1997: 53):

    a. Increase the core team size of AFCE Prime BEEF teams attending AFCE contingency training

    b. Obtain unique bare base equipment for home-station training of non-core team personnel

    c. Develop training material for advising officers and senior NCOs on the requirements and procedures for contract management in foreign countries

    d. Modify the Silver Flag training scenario by placing greater emphasis on each phase of beddown, sustainment, teardown, and redeployment

    e. Modify the Silver Flag training scenario by incorporating experienced shop personnel into the beddown planning exercise to capitalize on their expertise

    f. Decrease the timeframe between training deployments to between 12 and 18 months to maximize knowledge retention and proficiency

    g. Provide greater depth of training on maintenance of unique equipment, such as intermediate level maintenance

h. Modify the Silver Flag training scenario by including training on force protection requirements into classroom, beddown planning, and actual exercises

i. Provide greater in-depth training on setup and maintenance of Harvest Falcon assets by incorporating lessons learned on problems encountered in the field

j. Modify the Silver Flag training scenario by including training on and allowing use of advance technology during certain portions of the beddown planning exercise

k. Incorporate training on heavy equipment operations and convoy security procedures

3. Investigate whether perception levels of readiness and confidence can and should be translated into meaningful readiness indicators. The current standardized system that indicates readiness, known as the Status of Resources and Training System (SORTS), has been criticized for years by lawmakers as being inadequate to accurately assess true readiness levels. Congress is now mandating that it be improved, and the Pentagon is looking for ways to supplement current measures (Weible, 1997: 21). Asking military personnel if they feel they are ready for combat could provide data for one of these alternate measures.

Suggestions for Future Research

The following are topics that need further study in order to build upon the foundation of research laid with this thesis, as well as to answer questions that arose during the course of the analysis.

Instrument and Model Validation. Alternate measures may be available that could verify the strength and direction of the training perception/confidence relationship. This would serve to solidify the validity of the survey instrument, as well as lend support to the PCP model.

Perception/Performance Relationship. The direct relationship between training perception and end task performance should be studied in order to validate the hypothesized link and potential bias effects that task self-confidence brings into the picture. Though this relationship would be more difficult to characterize, the importance (or lack thereof) of training perception could be more firmly related to its impact on performance.

Officer/Enlisted Perception Levels. The survey results (as well as results from a similar survey 12 years ago) clearly indicate that officers tend to display lower perception levels of their readiness training and confidence than enlisted personnel display. An in-depth look at demographic factors, training regimes and duty responsibilities may expose reasons for this disparity, allowing those who design and administer training to tailor their programs specifically for their target audience.

Perception/Confidence Relationship Direction. Further evidence is needed to measure the strength and direction of the relationship between training perception and task confidence. The current effort provided evidence that a relationship exists, lending support to a previous study that showed that training perception influences task self-confidence. Further studies are needed to verify this causality and to identify other contributing factors.

Comparison of Perceptions with Readiness Indicators. What is reported and what is really true are often quite different. Comparison of formal readiness indicators, such as SORTS and Operational Readiness Inspection (ORI) reports, with readiness perceptions of those personnel who are subject to those readiness indicators, may provide an interesting gauge of how well these two bodies of data are in agreement.

Justification of Enhanced Training. As we approach a new millennium as the world's only remaining superpower, is there still a need to maintain the same readiness levels of the past? In light of CE's successful history of performance in a wide range of contingencies, is more readiness training really needed? Should CE adopt some form of "tiered readiness" that allows some or most units to remain at lower readiness levels? Are the costs of enhanced training (quality and quantity) justified by the potential benefits that will be gained? These are all noteworthy questions whose appropriateness continues to grow, especially as the military's role and responsibility continues to evolve.

Appendix A

Survey Package

Select the answer that most closely applies to you. USE THE COMPUTER SCAN-TRON SHEETS when marking your answer, NOT this page.

1. What is your rank?

① E-1
② E-2
③ E-3
④ E-4
⑤ E-5
⑥ E-6
⑦ None of the above (continue in Question #2)

2. What is your rank?

① E-7
② E-8
③ E-9
④ 0-1
⑤ 0-2
⑥ 0-3
⑦ None of the above (It was listed in Question #1 or it is listed in Question #3)

3. What is your rank?

① 0-4
② 0-5
③ 0-6
④ None of the above (It was listed in Question #1 or Question #2)

4. What is your general duty category and AFSC?

①	Officer	(32Exx)
②	Electrical Systems	(3E0x1)
③	HVAC/Refrig.	(3E1x1)
④	Pavements/Equip.	(3E2x1)
⑤	Structural	(3E3x1)
⑥	Utility Systems	(3E4x1)
⑦	None of the above (continue to Question #5)	

5. What is your general duty category and AFSC?

①	Power Production	(3E0x2)
②	Engineering	(3E5x1)
③	Readiness/Disaster Prep.	(3E9x1)
④	Liquid Fuels	(3E4x2)
⑤	Pest Management	(3E4x3)
⑥	Environmental Mgmt.	(3E4x3)
⑦	Already listed in Question #4, or not listed here	

6. What bachelor degree do you hold?

① None held
② Civil Engineering
③ Mechanical Engineering
④ Electrical Engineering
⑤ Architect/Architectural Engineering
⑥ Other Engineering
⑦ Other

7. To what flight are you currently assigned?

① Operations
② Engineering
③ Readiness
④ Environmental
⑤ Housing
⑥ Resources
⑦ Other

8. On average, how many hours per month do you personally spend in readiness training?

① Less than 4 hrs/month
② 4-8 hrs/month
③ 9-12 hrs/month
④ 13-16 hrs/month
⑤ More than 16 hrs/month

9. On average, what percentage of your time during a normal work-week is spent performing tasks that closely resemble the tasks you will perform while deployed during a contingency?

① Less than 20%
② 21 - 40%
③ 41 - 60%
④ 61 - 80%
⑤ More than 80%

10. How many times in your career have you been deployed to a contingency?

① Never
② Once
③ Twice
④ Three times
⑤ Four or more times

11. How many days have you been deployed to a contingency in the past 12 months?

① None
② 1-14 days
③ 15-60 days
④ 61-120 days
⑤ More than 120 days

12. How long have you been assigned to your squadron?

① Less than 2 months
② 2 months but less than 6 months
③ 6 months but less than 12 months
④ 12 months but less than 18 months
⑤ Longer than 18 months

Continue On Next Page

Based on the extent to which you agree or disagree with the given statements, please answer the next series of questions by using the rating scale below. Answer honestly - your identity will remain anonymous.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
①	②	③	④	⑤

13. The amount of readiness training I personally receive adequately prepares me for my contingency duties.
14. The amount of time our squadron spends on our normal peacetime mission and taskings does not leave enough time for adequate readiness training.
15. The readiness training I receive is realistic.
16. I know exactly what skills I am responsible for during a contingency.
17. As a whole, my squadron readiness training does not adequately prepare me for my assigned contingency duties.
18. The readiness training I receive does not really apply to anything I'll be doing during a contingency.
19. Readiness training is one of our squadron's highest priorities.
20. I need to train more with the actual equipment I'll be using during a contingency.
21. The readiness training I receive needs a lot of improvement.
22. The combined readiness training I receive for my specialty area from both my home station and Silver Flag at Tyndall AFB makes me confident that I am adequately trained to carry out my contingency duties.
23. I doubt I could perform my skills well in a contingency if required.
24. In a contingency, no matter what is asked of me, I can get the job done.
25. I am not sure my unit will perform well if we were to be deployed to a contingency setting tomorrow.
26. Our squadron needs a lot more training before we're ready for any contingency.
27. We have adequate time made available at my current duty station to complete our squadron's readiness training requirements.
28. I should be spending more time being trained for my contingency duties.
29. Our readiness training lacks realistic scenarios.
30. During a contingency, I am unsure about what skills are expected of me.
31. The overall readiness training conducted at my current assignment adequately prepares me to perform my assigned contingency duties.
32. Compared to other CE requirements at my current base, readiness training receives a low priority.
33. The readiness training I receive is appropriate for skills I might need during a contingency.
34. I receive adequate training time with the actual equipment I'll be using during a contingency.
35. I am confident in my contingency skills.
36. I need more readiness training than what I get at Silver Flag and in my home station training in order to feel confident about performing my duties during a contingency.
37. If deployed to a contingency setting tomorrow, I am confident in my squadron's ability to get the job done.
38. I am not confident I could do whatever is asked of me in a contingency setting.
39. My squadron is fully prepared for any contingency.
40. I am satisfied with the quality of readiness training I receive.

Appendix B

Survey Response Charts

Question #8: *"On average, how many hours per month do you personally spend in readiness training?"*

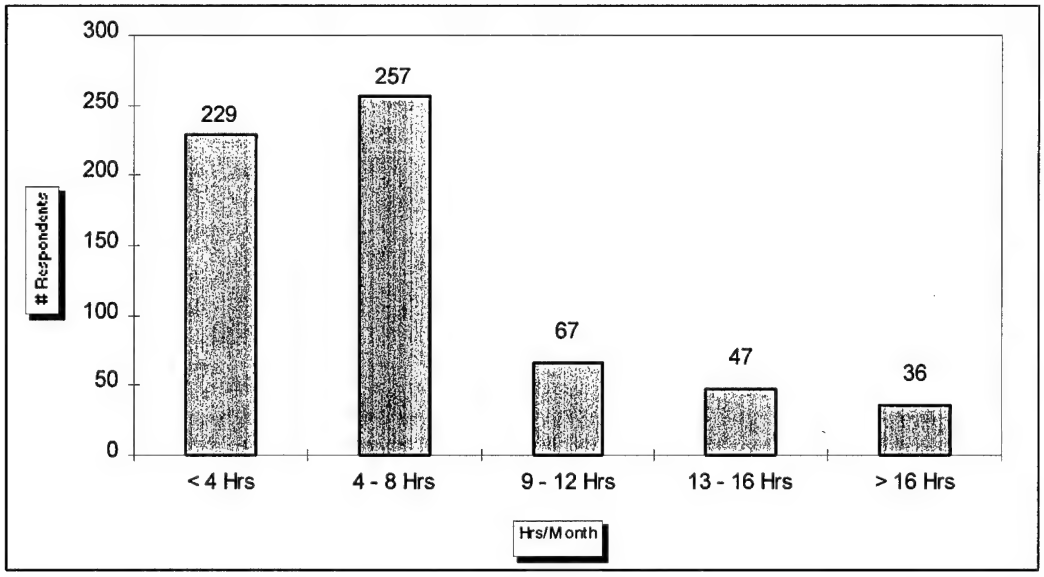

Figure B.1: Number of Overall Responses to Question #8

Table B.1: Breakdown of Responses by Group to Question #8

Respondents	Less than 4 hrs per month	4-8 hrs per month	9-12 hrs per month	13-16 hrs per month	More than 16 hrs/ month
Overall	36%	40%	11%	7%	6%
Officers	50%	33%	9%	7%	2%
Enlisted	35%	41%	11%	7%	6%
Flying MAJCOMs	37%	43%	9%	6%	6%
Non-Flying MAJCOMs	35%	36%	13%	10%	6%
ACC	31%	44%	10%	7%	7%
AMC	44%	41%	7%	4%	5%
AFMC	27%	36%	19%	11%	8%
AFSPC	49%	29%	10%	12%	1%
AETC	24%	54%	10%	2%	10%
Silver Flag	30%	35%	15%	15%	5%

Question #9: *"On average, what percentage of your time during a normal work-week is spent performing tasks that closely resemble the tasks you will perform while deployed during a contingency?"*

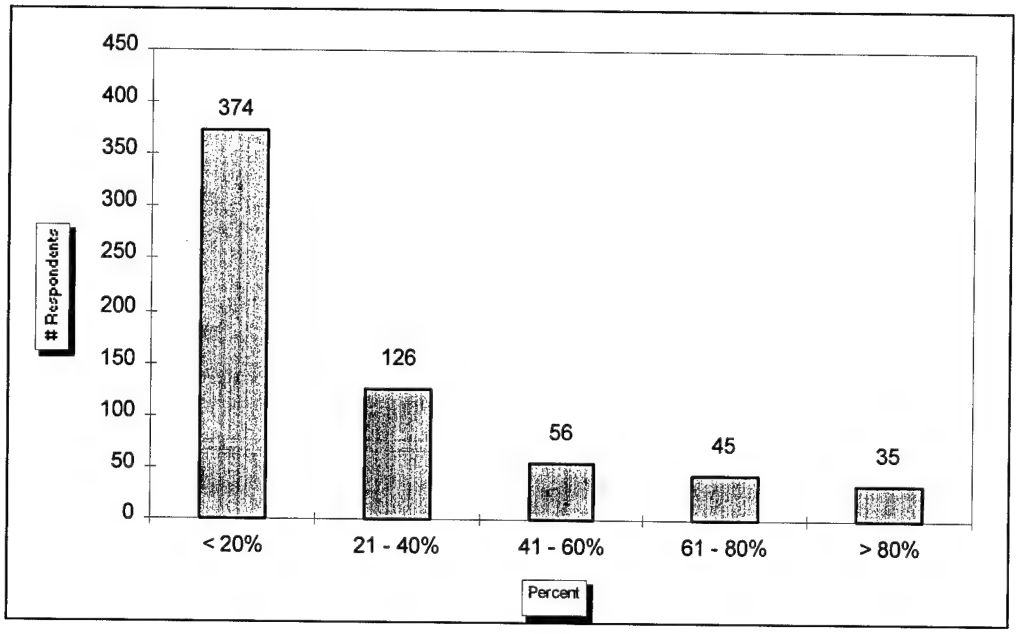

Figure B.2: Number of Overall Responses to Question #9

Table B.2: Breakdown of Responses by Group to Question #9

Respondents	Less than 20%	21-40%	41-60%	61-80%	More than 80%
Overall	59%	20%	9%	7%	6%
Officers	79%	11%	2%	7%	2%
Enlisted	57%	21%	10%	7%	6%
Flying MAJCOMs	61%	20%	7%	7%	6%
Non-Flying MAJCOMs	53%	22%	12%	8%	6%
ACC	58%	20%	7%	9%	6%
AMC	64%	18%	8%	5%	5%
AFMC	50%	22%	16%	5%	7%
AFSPC	58%	19%	12%	7%	4%
AETC	46%	27%	5%	15%	7%
Silver Flag	95%	5%	0%	0%	0%

Question #10: *"How many times in your career have you been deployed to a contingency?"*

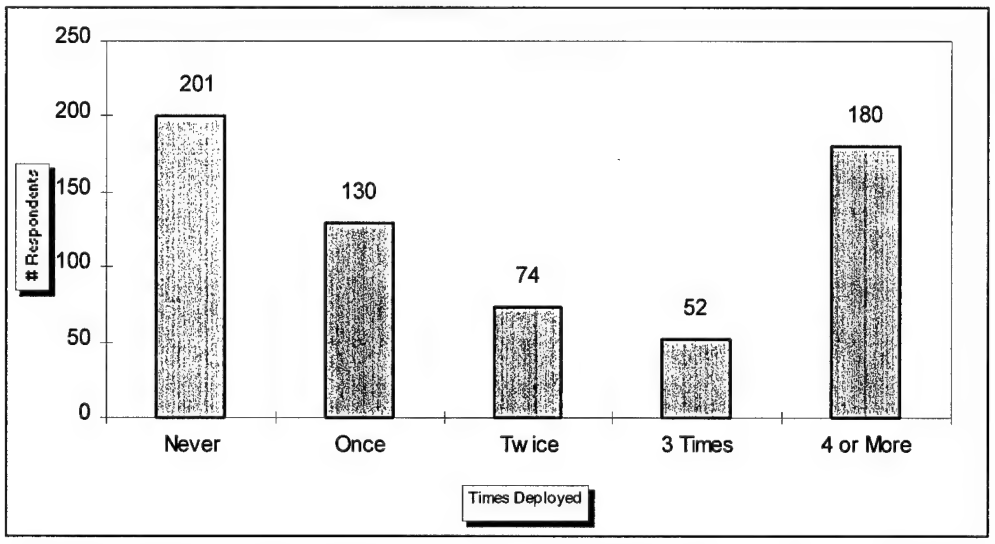

Figure B.3: Number of Overall Responses to Question #10

Table B.3: Breakdown of Responses by Group to Question #10

Respondents	Never	Once	Twice	Three Times	Four or more times
Overall	32%	20%	12%	8%	28%
Officers	64%	28%	5%	2%	2%
Enlisted	28%	20%	12%	9%	31%
Flying MAJCOMs	29%	20%	12%	8%	31%
Non-Flying MAJCOMs	30%	23%	12%	10%	26%
ACC	29%	24%	10%	7%	30%
AMC	29%	14%	16%	8%	33%
AFMC	35%	16%	10%	13%	26%
AFSPC	26%	30%	16%	7%	21%
AETC	27%	22%	7%	10%	34%
Silver Flag	95%	5%	0%	0%	0%

Question #11: *"How many days have you been deployed to a contingency in the past 12 months?"*

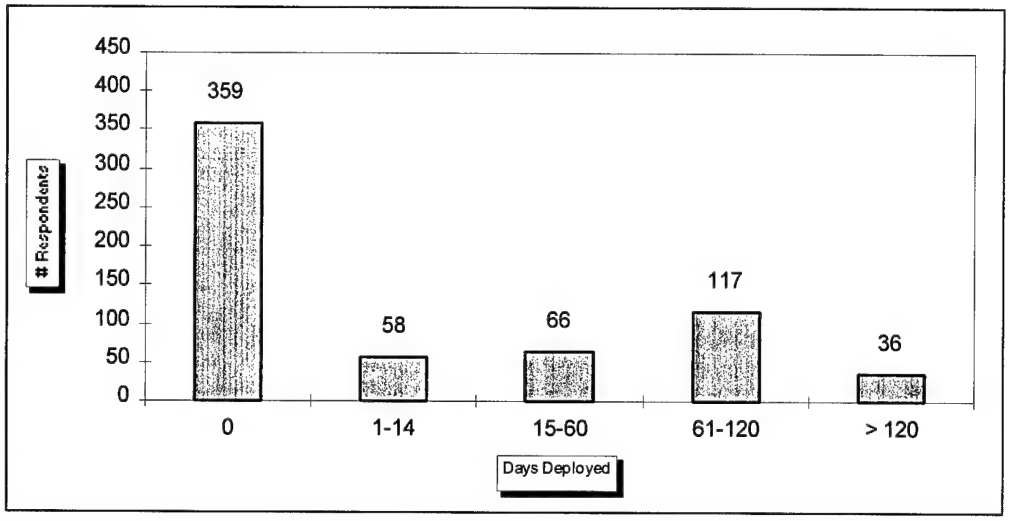

Figure B.4: Number of Overall Responses to Question #11

Table B.4: Breakdown of Responses by Group to Question #11

Respondents	None	1-14 days	15-60 days	61-120 days	More than 120 days
Overall	56%	9%	10%	18%	6%
Officers	74%	3%	2%	17%	3%
Enlisted	55%	10%	11%	18%	6%
Flying MAJCOMs	52%	9%	14%	17%	8%
Non-Flying MAJCOMs	61%	10%	5%	23%	2%
ACC	54%	3%	11%	21%	12%
AMC	50%	18%	18%	11%	3%
AFMC	55%	13%	8%	22%	2%
AFSPC	58%	6%	4%	30%	2%
AETC	78%	10%	0%	13%	0%
Silver Flag	100%	0%	0%	0%	0%

Question #12: *"How long have you been assigned to your squadron?"*

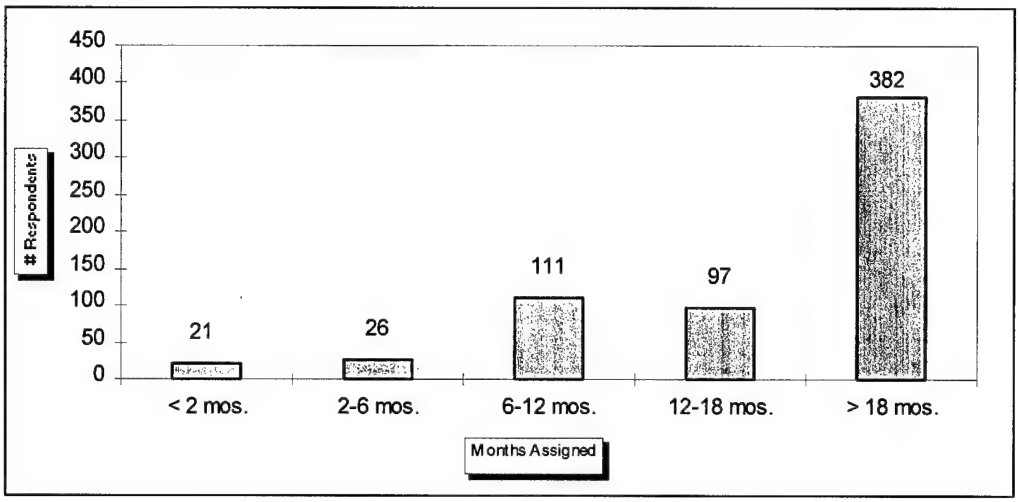

Figure B.5: Number of Overall Responses to Question #12

Table B.5: Breakdown of Responses by Group to Question #12

Respondents	Less than 2 months	2 months but < 6 months	6 months but < 12 months	12 months but <18 months	Longer than 18 months
Overall	3%	4%	17%	15%	60%
Officers	5%	3%	28%	29%	35%
Enlisted	3%	4%	16%	14%	62%
Flying MAJCOMs	4%	4%	19%	15%	59%
Non-Flying MAJCOMs	3%	5%	12%	14%	67%
ACC	5%	2%	20%	14%	58%
AMC	2%	7%	17%	15%	60%
AFMC	1%	5%	8%	11%	75%
AFSPC	5%	2%	17%	16%	61%
AETC	2%	7%	10%	17%	63%
Silver Flag	0%	0%	55%	40%	5%

Statement #13: *"The amount of readiness training I personally receive adequately prepares me for my contingency duties."*

Construct: Quantity of Training (personal quantity)

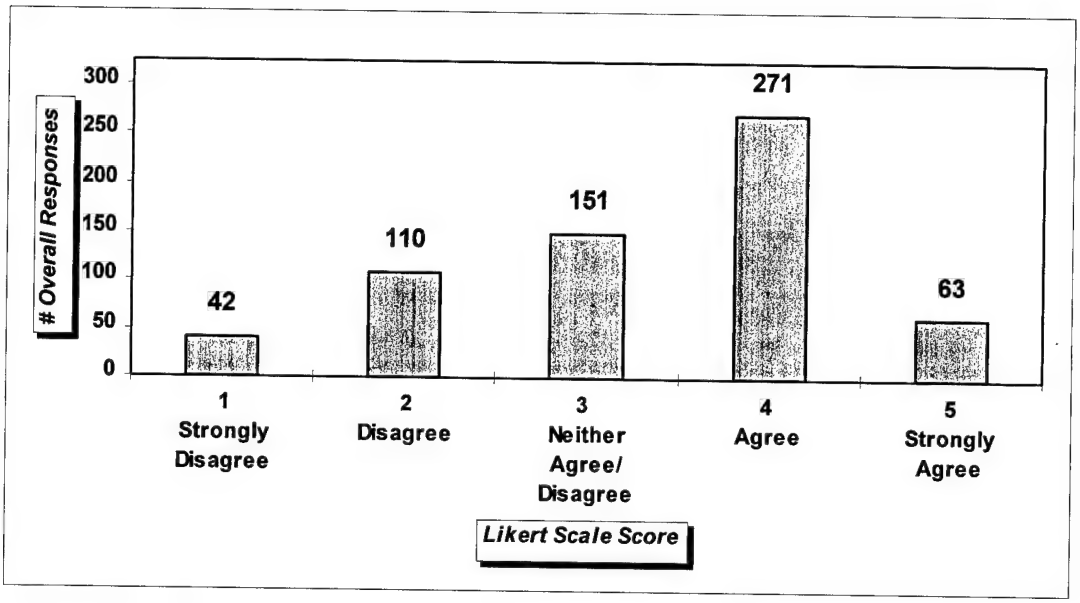

Figure B.6: Number of Overall Responses to Statement #13

Table B.6: Breakdown of Responses by Group to Statement #13

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	7%	17%	24%	43%	10%	3.32
Officers	12%	35%	28%	22%	3%	2.71
Enlisted	6%	16%	23%	45%	11%	3.38
Flying MAJCOMs	6%	18%	24%	42%	11%	3.34
Non-Flying MAJCOMs	7%	16%	22%	45%	9%	3.33
ACC	5%	19%	24%	42%	11%	3.35
AMC	7%	16%	24%	43%	10%	3.33
AFMC	8%	19%	17%	48%	9%	3.32
AFSPC	8%	17%	24%	43%	8%	3.26
AETC	5%	10%	29%	44%	12%	3.49
Silver Flag	15%	20%	40%	20%	5%	2.80

Statement #14: *"The amount of time our squadron spends on our normal peacetime mission and taskings does not leave enough time for adequate readiness training."*

Construct: Quantity of Training (unit quantity)

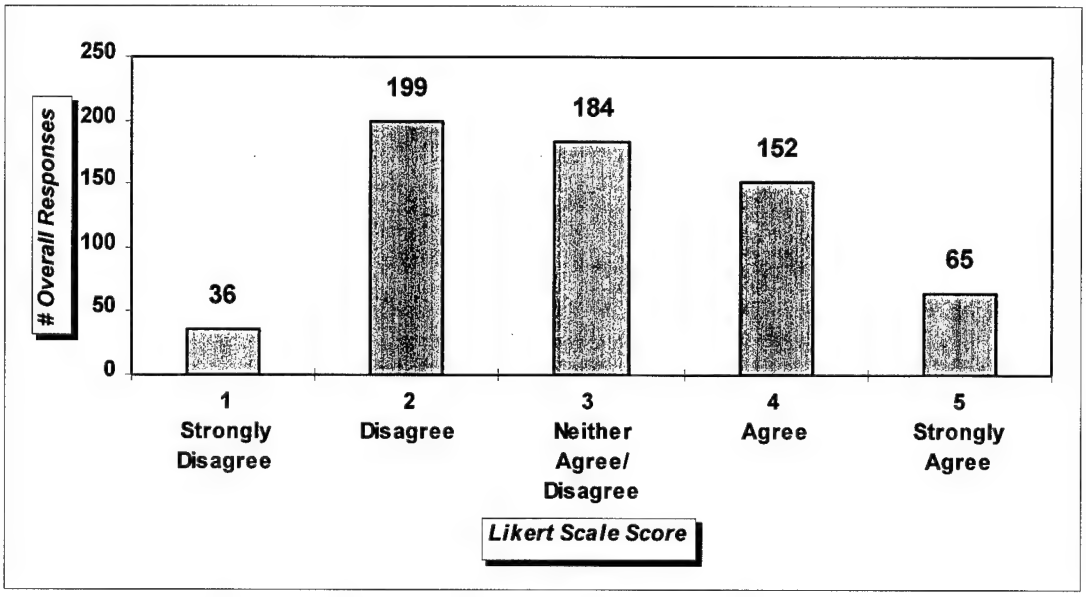

Figure B.7: Number of Overall Responses to Statement #14

Table B.7: Breakdown of Responses by Group to Statement #14

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	6%	31%	29%	24%	10%	3.01
Officers	3%	16%	24%	33%	24%	3.59
Enlisted	6%	33%	29%	23%	9%	2.96
Flying MAJCOMs	6%	30%	32%	24%	9%	3.01
Non-Flying MAJCOMs	6%	34%	25%	25%	10%	2.99
ACC	6%	33%	31%	23%	8%	2.95
AMC	5%	27%	32%	25%	11%	3.08
AFMC	10%	36%	25%	19%	10%	2.82
AFSPC	2%	35%	25%	30%	8%	3.07
AETC	5%	29%	22%	29%	15%	3.20
Silver Flag	5%	20%	25%	20%	30%	3.50

Statement #15: *"The readiness training I receive is realistic."*

Construct: Quality of Training (realistic)

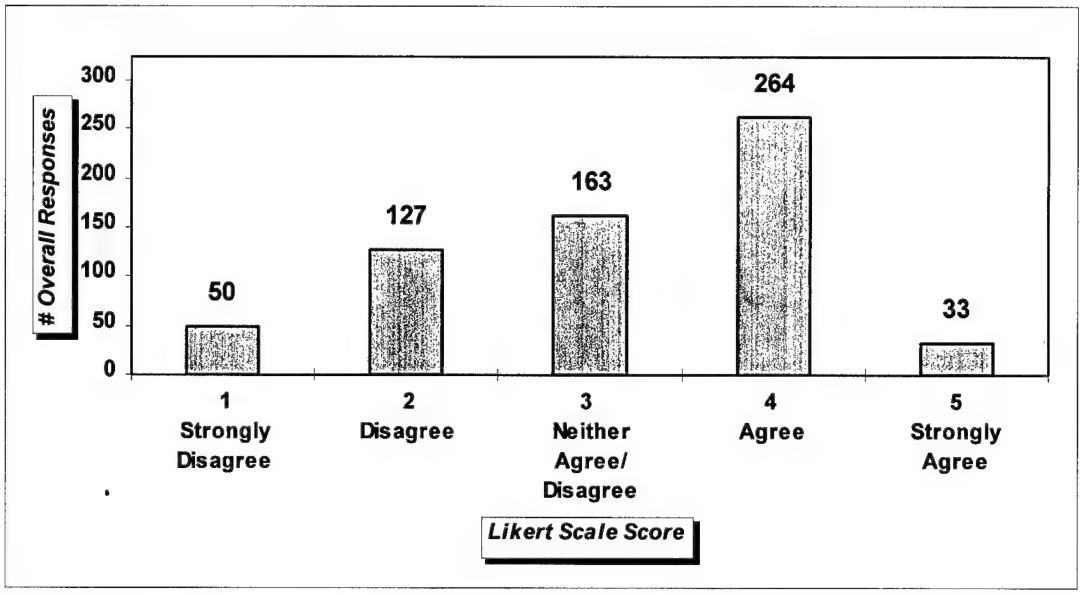

Figure B.8: Number of Overall Responses to Statement #15

Table B.8: Breakdown of Responses by Group to Statement #15

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	8%	20%	26%	41%	5%	3.16
Officers	9%	22%	24%	38%	7%	3.12
Enlisted	8%	20%	26%	42%	5%	3.17
Flying MAJCOMs	6%	22%	25%	43%	5%	3.20
Non-Flying MAJCOMs	12%	17%	27%	39%	5%	3.07
ACC	6%	24%	22%	42%	6%	3.17
AMC	5%	19%	28%	44%	4%	3.24
AFMC	16%	16%	23%	39%	5%	3.01
AFSPC	10%	16%	30%	41%	5%	3.15
AETC	7%	22%	32%	37%	2%	3.05
Silver Flag	10%	10%	30%	40%	10%	3.30

***Statement #16**: "I know exactly what skills I am responsible for during a contingency."*

Construct: Quality of Training (effectiveness)

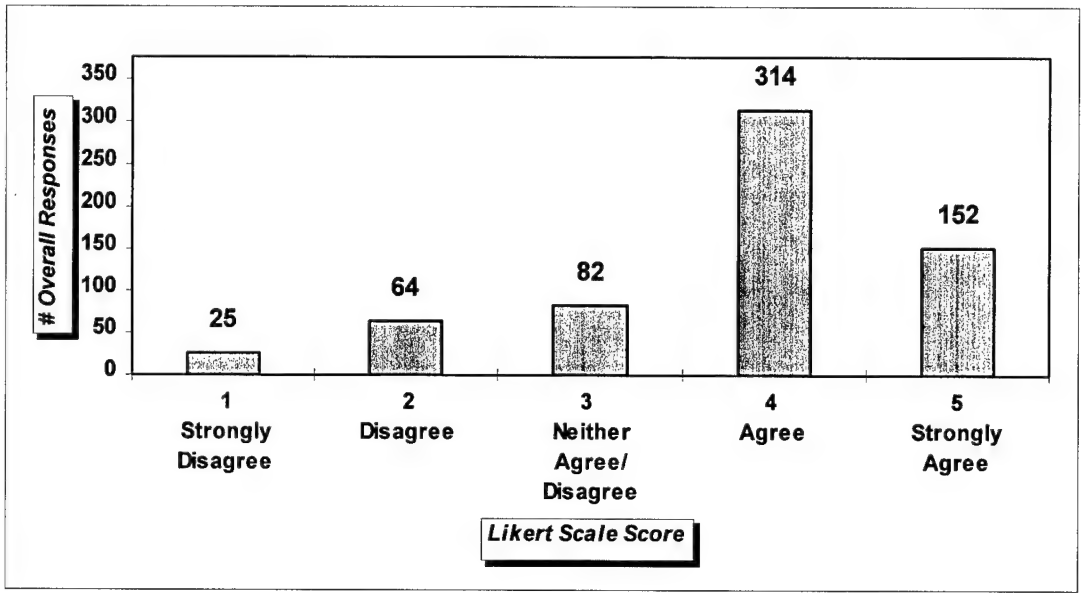

Figure B.9: Number of Overall Responses to Statement #16

Table B.9: Breakdown of Responses by Group to Statement #16

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	4%	10%	13%	49%	24%	3.80
Officers	14%	26%	14%	35%	12%	3.05
Enlisted	3%	8%	13%	51%	25%	3.86
Flying MAJCOMs	4%	11%	14%	47%	25%	3.79
Non-Flying MAJCOMs	3%	6%	12%	55%	24%	3.93
ACC	4%	12%	14%	47%	24%	3.75
AMC	4%	9%	14%	48%	26%	3.83
AFMC	2%	5%	12%	52%	28%	3.99
AFSPC	5%	7%	13%	63%	12%	3.70
AETC	0%	2%	10%	46%	42%	4.27
Silver Flag	25%	40%	25%	0%	10%	2.40

Statement #17: *"As a whole, my squadron readiness training does not adequately prepare me for my assigned contingency duties."*

Construct: Quality of Training (adequacy)

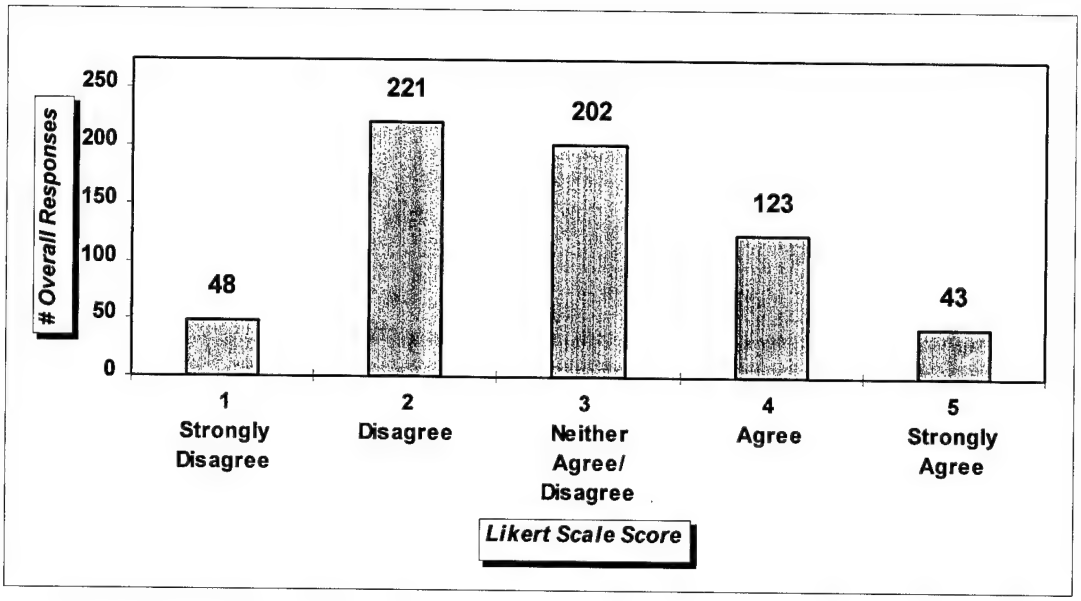

Figure B.10: Number of Overall Responses to Statement #17

Table B.10: Breakdown of Responses by Group to Statement #17

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	8%	35%	32%	19%	7%	2.84
Officers	7%	24%	33%	28%	9%	3.07
Enlisted	8%	36%	31%	19%	7%	2.80
Flying MAJCOMs	8%	33%	31%	21%	6%	2.84
Non-Flying MAJCOMs	7%	38%	33%	16%	7%	2.77
ACC	11%	37%	28%	20%	4%	2.69
AMC	5%	28%	36%	23%	9%	3.04
AFMC	9%	41%	32%	11%	8%	2.67
AFSPC	2%	33%	38%	21%	5%	2.93
AETC	10%	42%	27%	15%	7%	2.68
Silver Flag	5%	25%	25%	25%	20%	3.30

Statement #18: *"The readiness training I receive does not really apply to anything I'll be doing during a contingency."*

Construct: Quality of Training (appropriateness)

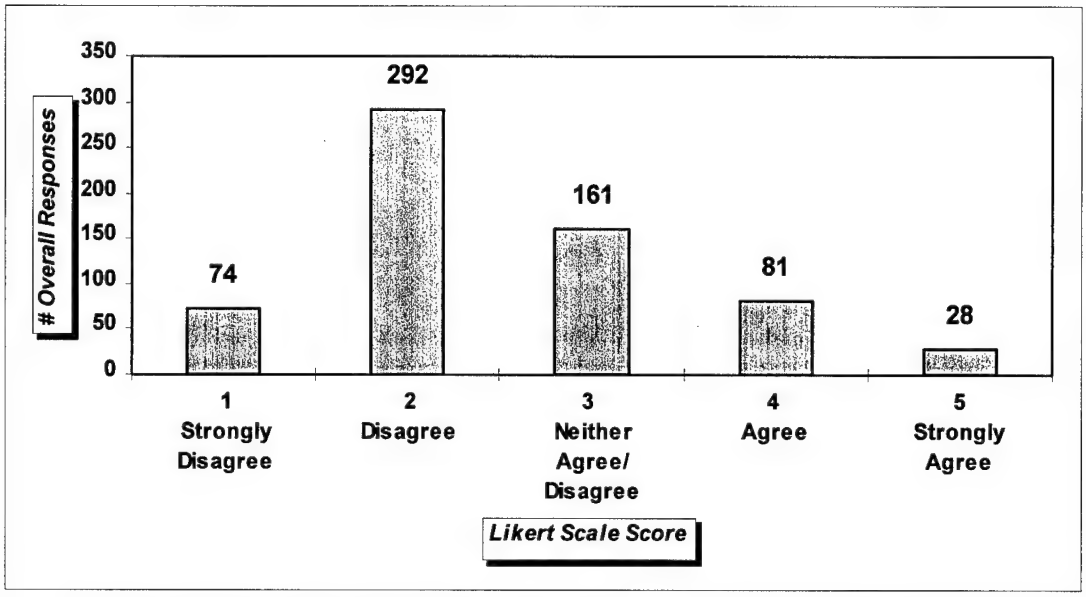

Figure B.11: Number of Overall Responses to Statement #18

Table B.11: Breakdown of Responses by Group to Statement #18

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	12%	46%	25%	13%	4%	2.52
Officers	22%	43%	24%	5%	5%	2.28
Enlisted	11%	46%	26%	13%	5%	2.55
Flying MAJCOMs	11%	44%	27%	15%	4%	2.58
Non-Flying MAJCOMs	12%	50%	23%	11%	4%	2.45
ACC	10%	42%	27%	17%	4%	2.60
AMC	11%	46%	25%	12%	5%	2.54
AFMC	19%	49%	16%	11%	5%	2.36
AFSPC	5%	52%	32%	7%	4%	2.52
AETC	12%	49%	20%	17%	2%	2.49
Silver Flag	25%	40%	25%	0%	10%	2.30

***Statement #19**: "Readiness training is one of our squadron's highest priorities."*

Construct: Quality of Training (priority)

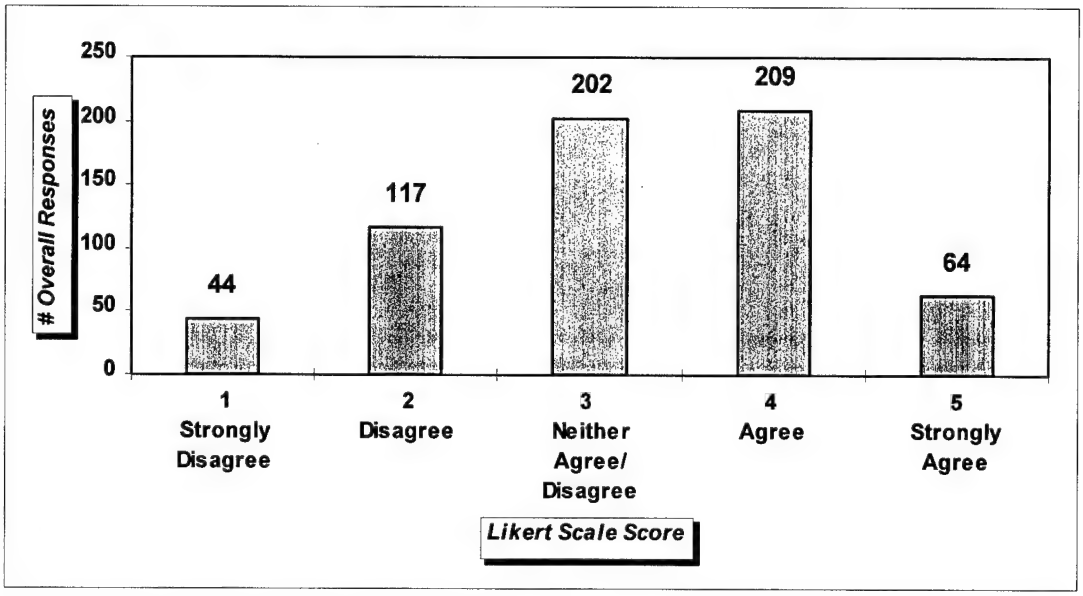

Figure B.12: Number of Overall Responses to Statement #19

Table B.12: Breakdown of Responses by Group to Statement #19

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	7%	18%	32%	33%	10%	3.22
Officers	19%	24%	19%	28%	10%	2.86
Enlisted	6%	18%	33%	33%	10%	3.25
Flying MAJCOMs	7%	17%	34%	33%	10%	3.23
Non-Flying MAJCOMs	7%	22%	27%	34%	11%	3.19
ACC	7%	14%	31%	35%	13%	3.34
AMC	7%	20%	39%	30%	5%	3.07
AFMC	3%	13%	24%	41%	19%	3.59
AFSPC	12%	30%	33%	23%	2%	2.74
AETC	5%	24%	22%	39%	10%	3.24
Silver Flag	15%	20%	30%	25%	10%	2.95

Statement #20: *"I need to train more with the actual equipment I'll be using during a contingency."*

Construct: Quality of Training (hands-on)

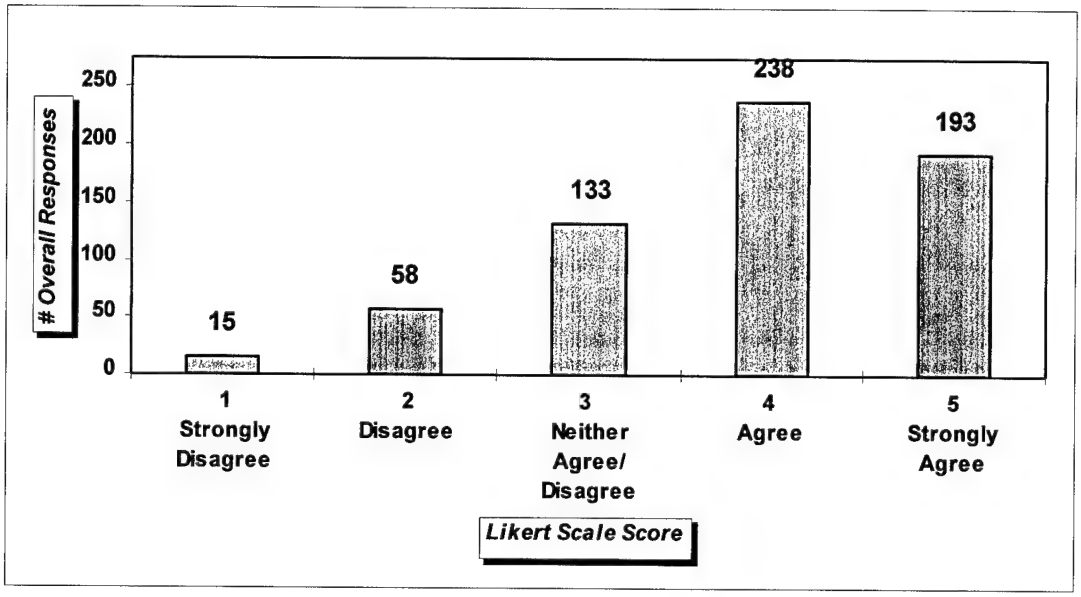

Figure B.13: Number of Overall Responses to Statement #20

Table B.13: Breakdown of Responses by Group to Statement #20

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	2%	9%	21%	37%	30%	3.84
Officers	0%	3%	26%	40%	31%	3.98
Enlisted	3%	10%	20%	37%	40%	3.83
Flying MAJCOMs	3%	10%	22%	39%	27%	3.76
Non-Flying MAJCOMs	2%	8%	18%	36%	36%	3.97
ACC	3%	11%	20%	39%	27%	3.76
AMC	3%	9%	23%	39%	26%	3.76
AFMC	4%	7%	14%	35%	40%	4.00
AFSPC	0%	11%	17%	39%	33%	3.29
AETC	0%	5%	32%	29%	34%	3.93
Silver Flag	0%	0%	35%	25%	40%	4.05

Statement #21: *"The readiness training I receive needs a lot of improvement."*

Construct: Quality of Training (overall)

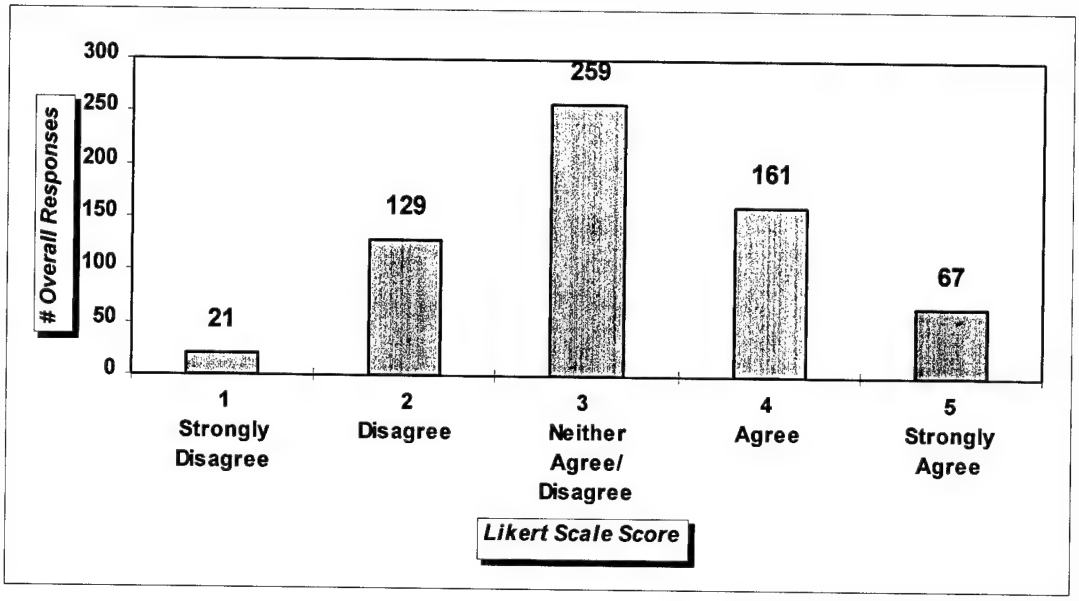

Figure B.14: Number of Overall Responses to Statement #21

Table B.14: Breakdown of Responses by Group to Statement #21

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	3%	20%	41%	25%	11%	3.20
Officers	5%	16%	31%	40%	9%	3.31
Enlisted	3%	21%	42%	24%	11%	3.18
Flying MAJCOMs	4%	22%	40%	25%	9%	3.14
Non-Flying MAJCOMs	2%	19%	42%	24%	12%	3.27
ACC	6%	23%	38%	26%	7%	3.04
AMC	1%	19%	43%	24%	12%	3.27
AFMC	3%	19%	37%	25%	16%	3.33
AFSPC	1%	14%	49%	26%	10%	3.29
AETC	0%	29%	42%	20%	10%	3.10
Silver Flag	5%	10%	30%	35%	20%	3.55

Statement #22: *"The combined readiness training I receive for my specialty area from both my home station and Silver Flag at Tyndall AFB makes me confident that I am adequately trained to carry out my contingency duties."*

Construct: Self-Confidence

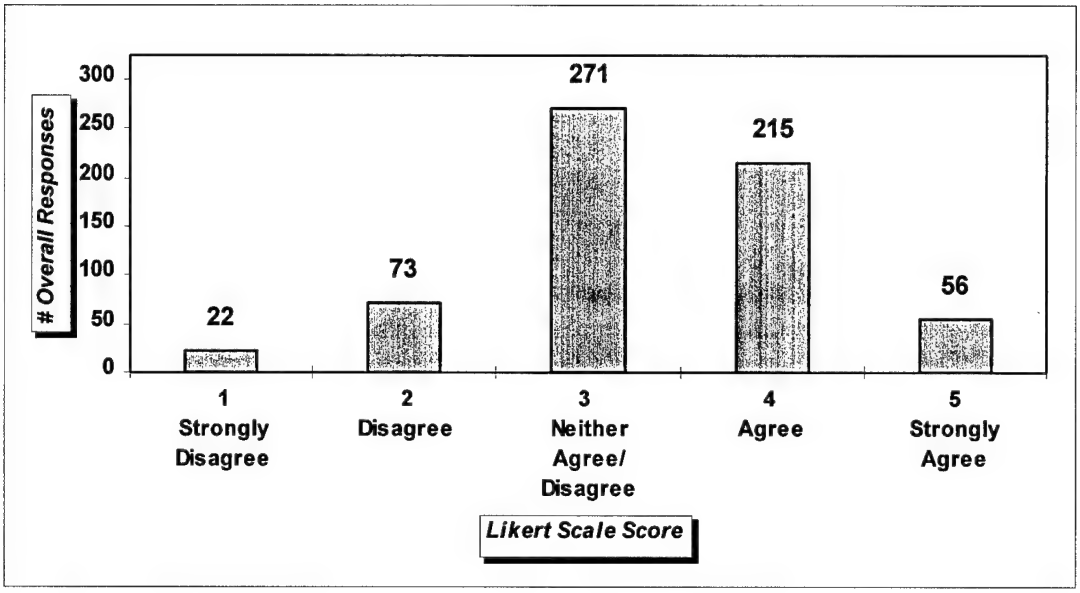

Figure B.15: Number of Overall Responses to Statement #22

Table B.15: Breakdown of Responses by Group to Statement #22

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	4%	12%	42%	34%	9%	3.34
Officers	2%	17%	36%	38%	7%	3.31
Enlisted	4%	11%	43%	33%	9%	3.32
Flying MAJCOMs	4%	11%	44%	34%	7%	3.31
Non-Flying MAJCOMs	3%	12%	41%	32%	11%	3.35
ACC	4%	10%	41%	37%	9%	3.37
AMC	4%	11%	48%	31%	5%	3.22
AFMC	3%	14%	40%	35%	8%	3.29
AFSPC	2%	13%	42%	32%	11%	3.36
AETC	5%	7%	42%	27%	20%	3.49
Silver Flag	0%	15%	30%	40%	15%	3.55

***Statement #23**: "I doubt I could perform my skills well in a contingency if required."*

Construct: Self-Confidence

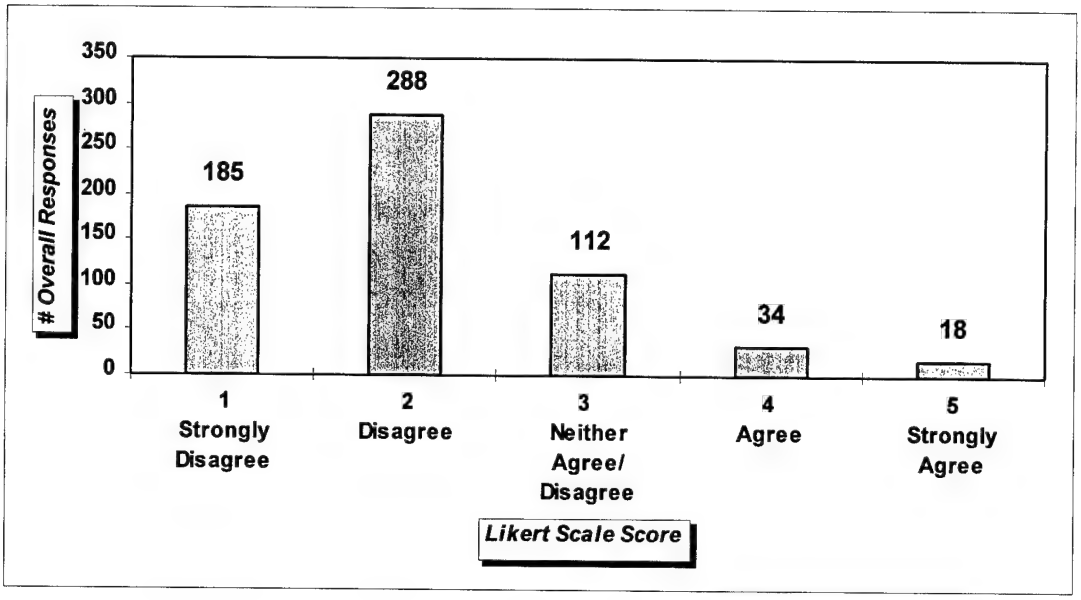

Figure B.16: Number of Overall Responses to Statement #23

Table B.16: Breakdown of Responses by Group to Statement #23

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	29%	45%	18%	5%	3%	2.08
Officers	21%	53%	17%	5%	3%	2.17
Enlisted	30%	44%	18%	5%	3%	2.07
Flying MAJCOMs	29%	44%	19%	6%	3%	2.11
Non-Flying MAJCOMs	32%	46%	16%	5%	2%	2.00
ACC	31%	44%	19%	4%	2%	2.01
AMC	25%	44%	18%	9%	4%	2.23
AFMC	30%	48%	15%	4%	2%	2.00
AFSPC	29%	48%	14%	6%	4%	2.08
AETC	42%	37%	20%	2%	0%	1.83
Silver Flag	5%	70%	15%	5%	5%	2.35

Statement #24: *"In a contingency, no matter what is asked of me, I can get the job done."*

Construct: Self-Confidence

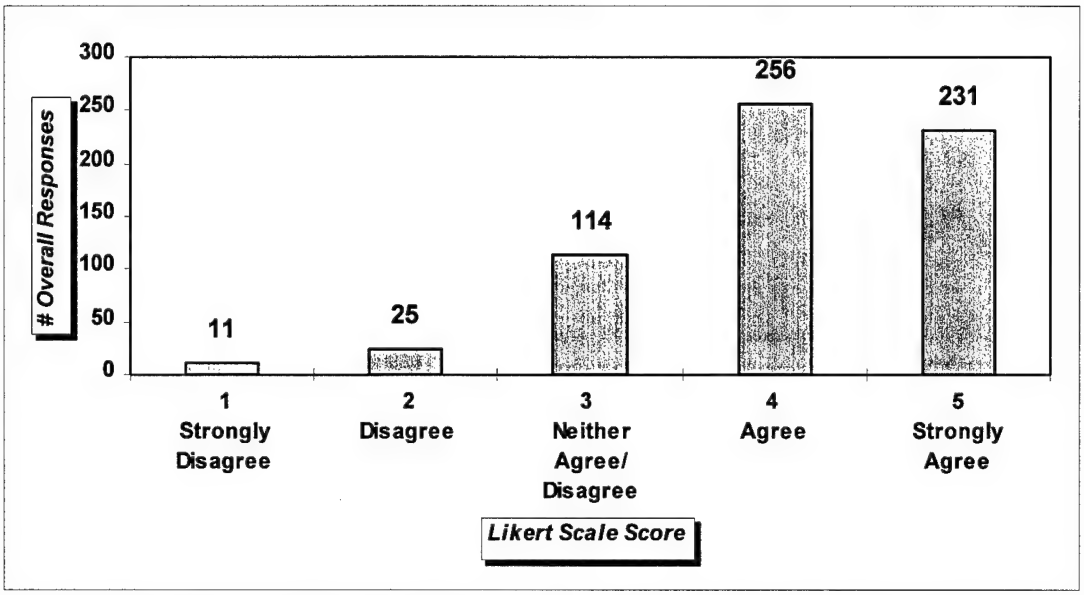

Figure B.17: Number of Overall Responses to Statement #24

Table B.17: Breakdown of Responses by Group to Statement #24

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	2%	4%	18%	40%	36%	4.06
Officers	3%	9%	19%	41%	28%	3.81
Enlisted	2%	3%	18%	40%	37%	4.07
Flying MAJCOMs	2%	4%	20%	42%	34%	4.02
Non-Flying MAJCOMs	2%	4%	14%	38%	42%	4.15
ACC	2%	4%	18%	42%	35%	4.05
AMC	1%	4%	22%	42%	31%	3.98
AFMC	4%	2%	17%	42%	34%	3.99
AFSPC	0%	5%	14%	36%	45%	4.21
AETC	0%	5%	7%	32%	56%	4.39
Silver Flag	5%	15%	20%	35%	25%	3.60

Statement #25: *"I am not sure my unit will perform well if we were to be deployed to a contingency setting tomorrow."*

Construct: Confidence in Unit

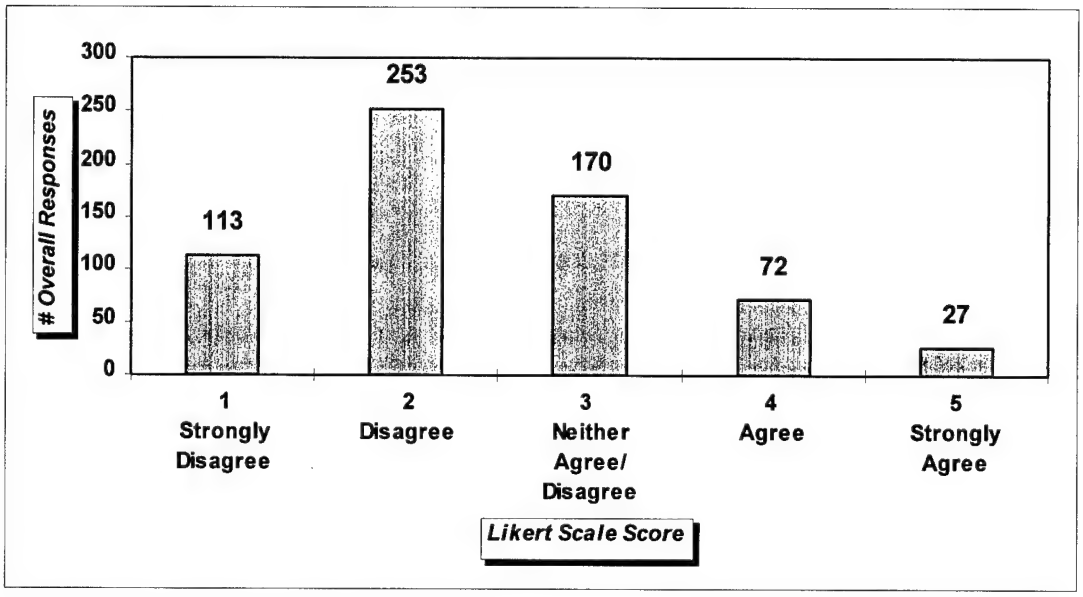

Figure B.18: Number of Overall Responses to Statement #25

Table B.18: Breakdown of Responses by Group to Statement #25

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	18%	40%	27%	11%	4%	2.44
Officers	26%	47%	17%	7%	3%	2.16
Enlisted	17%	39%	28%	12%	4%	2.47
Flying MAJCOMs	17%	40%	27%	13%	5%	2.49
Non-Flying MAJCOMs	19%	42%	27%	9%	3%	2.34
ACC	21%	40%	23%	12%	4%	2.37
AMC	11%	39%	32%	13%	6%	2.65
AFMC	25%	38%	25%	10%	2%	2.26
AFSPC	15%	43%	33%	7%	2%	2.40
AETC	15%	49%	22%	10%	5%	2.41
Silver Flag	25%	25%	25%	15%	10%	2.60

Statement #26: *"Our squadron needs a lot more training before we're ready for any contingency."*

Construct: Confidence in Unit

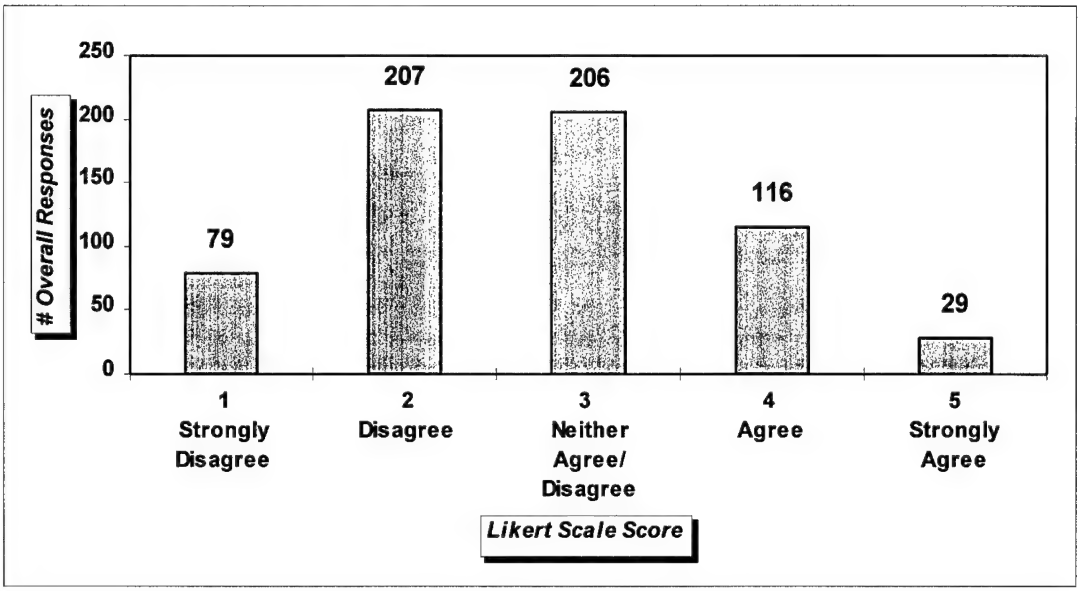

Figure B.19: Number of Overall Responses to Statement #26

Table B.19: Breakdown of Responses by Group to Statement #26

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	12%	33%	32%	18%	5%	2.70
Officers	9%	36%	21%	29%	5%	2.86
Enlisted	13%	32%	33%	17%	5%	2.69
Flying MAJCOMs	13%	32%	31%	19%	6%	2.73
Non-Flying MAJCOMs	12%	34%	36%	16%	3%	2.63
ACC	16%	33%	27%	18%	5%	2.63
AMC	8%	30%	37%	19%	6%	2.85
AFMC	17%	30%	30%	19%	3%	2.60
AFSPC	7%	33%	42%	16%	2%	2.73
AETC	12%	42%	34%	10%	2%	2.49
Silver Flag	5%	35%	20%	35%	5%	3.00

Statement #27: *"We have adequate time made available at my current duty station to complete our squadron's readiness training requirements."*

Construct: Quantity of Training (unit quantity)

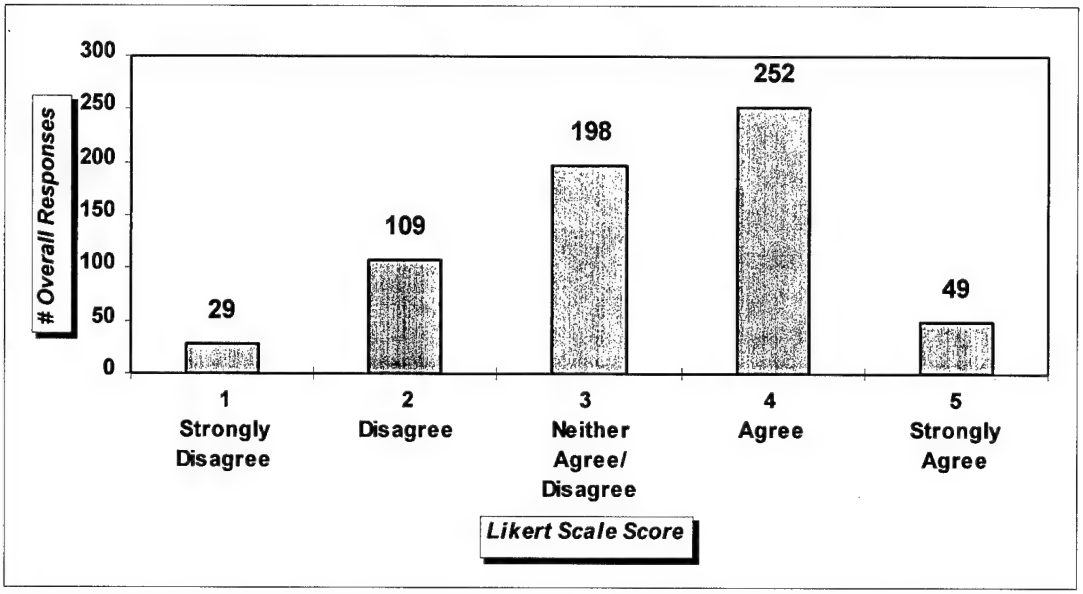

Figure B.20: Number of Overall Responses to Statement #27

Table B.20: Breakdown of Responses by Group to Statement #27

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	5%	17%	31%	40%	8%	3.29
Officers	12%	33%	22%	26%	7%	2.83
Enlisted	4%	16%	32%	41%	8%	3.33
Flying MAJCOMs	3%	16%	34%	39%	7%	3.31
Non-Flying MAJCOMs	7%	18%	26%	42%	7%	3.25
ACC	3%	13%	33%	44%	9%	3.43
AMC	4%	21%	36%	34%	5%	3.15
AFMC	9%	16%	23%	44%	9%	3.27
AFSPC	5%	23%	29%	38%	6%	3.18
AETC	5%	15%	27%	46%	7%	3.37
Silver Flag	10%	20%	30%	20%	20%	3.20

Statement #28: *"I should be spending more time being trained for my contingency duties."*

Construct: Quantity of Training (personal quantity)

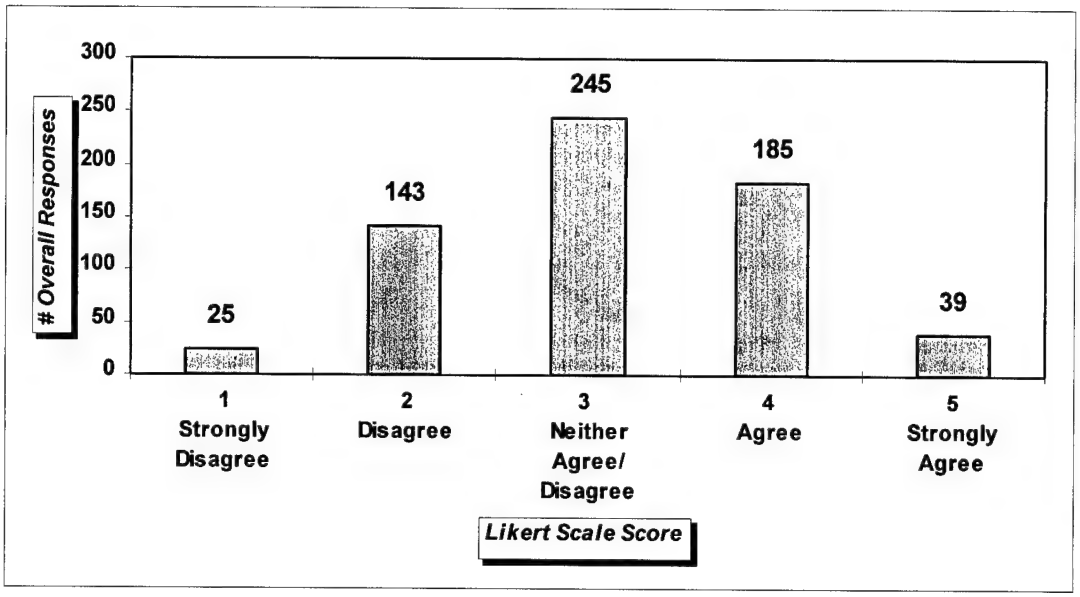

Figure B.21: Number of Overall Responses to Statement #28

Table B.21: Breakdown of Responses by Group to Statement #28

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	4%	22%	39%	29%	6%	3.11
Officers	3%	10%	33%	38%	16%	3.52
Enlisted	4%	24%	39%	28%	5%	3.07
Flying MAJCOMs	3%	23%	41%	28%	6%	3.11
Non-Flying MAJCOMs	5%	23%	36%	31%	6%	3.10
ACC	2%	26%	42%	27%	4%	3.04
AMC	5%	18%	38%	29%	10%	3.21
AFMC	4%	27%	37%	24%	8%	3.03
AFSPC	4%	17%	32%	44%	4%	3.27
AETC	7%	24%	44%	20%	5%	2.90
Silver Flag	10%	20%	20%	40%	10%	3.20

Statement #29: *"Our readiness training lacks realistic scenarios."*

Construct: Quality of Training (realistic)

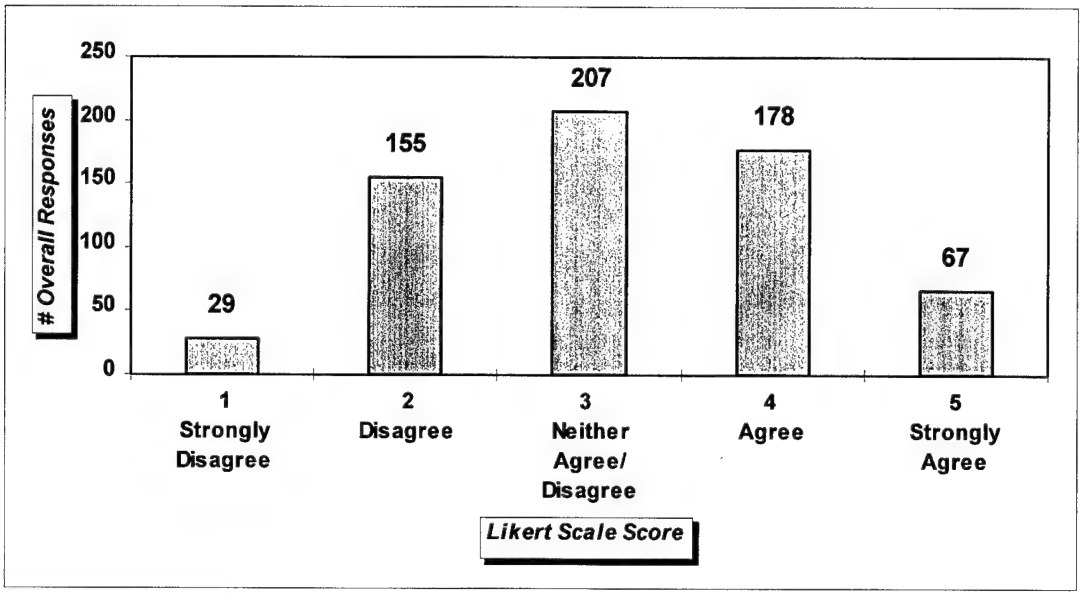

Figure B.22: Number of Overall Responses to Statement #29

Table B.22: Breakdown of Responses by Group to Statement #29

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	5%	24%	33%	28%	11%	3.15
Officers	2%	33%	33%	26%	7%	3.03
Enlisted	5%	24%	32%	28%	11%	3.16
Flying MAJCOMs	5%	22%	33%	28%	12%	3.21
Non-Flying MAJCOMs	5%	27%	31%	29%	8%	3.07
ACC	5%	21%	35%	26%	12%	3.18
AMC	4%	23%	31%	31%	12%	3.25
AFMC	7%	29%	28%	28%	8%	3.01
AFSPC	4%	24%	32%	33%	7%	3.17
AETC	5%	29%	34%	22%	10%	3.02
Silver Flag	0%	40%	35%	20%	5%	2.90

Statement #30: *"During a contingency, I am unsure about what skills are expected of me."*

Construct: Quality of Training (effectiveness)

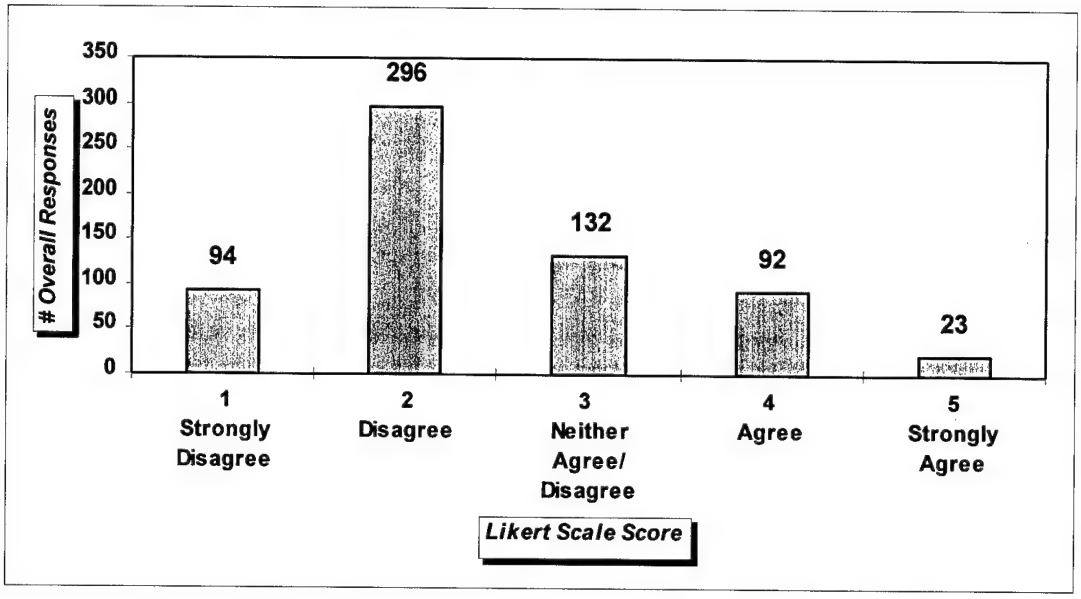

Figure B.23: Number of Overall Responses to Statement #30

Table B.23: Breakdown of Responses by Group to Statement #30

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	15%	47%	21%	14%	4%	2.45
Officers	12%	38%	22%	17%	10%	2.76
Enlisted	15%	47%	20%	14%	3%	2.43
Flying MAJCOMs	16%	46%	21%	13%	4%	2.44
Non-Flying MAJCOMs	14%	48%	18%	18%	2%	2.45
ACC	16%	47%	23%	11%	3%	2.37
AMC	15%	45%	19%	16%	5%	2.52
AFMC	14%	44%	22%	20%	1%	2.50
AFSPC	11%	55%	14%	17%	4%	2.48
AETC	22%	44%	20%	15%	0%	2.27
Silver Flag	5%	35%	35%	10%	15%	2.95

Statement #31: *"The overall readiness training conducted at my current assignment adequately prepares me to perform my assigned contingency duties."*

Construct: Quality of Training (adequacy)

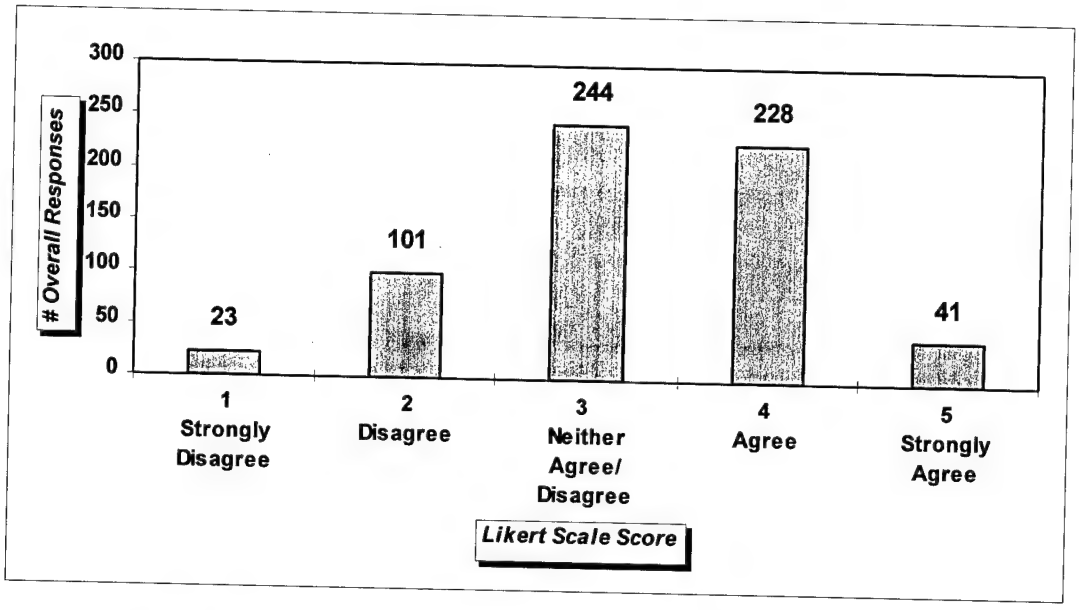

Figure B.24: Number of Overall Responses to Statement #31

Table B.24: Breakdown of Responses by Group to Statement #31

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	4%	16%	38%	36%	7%	3.25
Officers	5%	24%	36%	31%	3%	3.03
Enlisted	3%	15%	39%	36%	7%	3.28
Flying MAJCOMs	3%	15%	39%	37%	7%	3.28
Non-Flying MAJCOMs	3%	15%	40%	35%	7%	3.27
ACC	2%	16%	40%	36%	7%	3.30
AMC	5%	14%	37%	37%	7%	3.25
AFMC	3%	14%	37%	40%	5%	3.30
AFSPC	2%	17%	49%	25%	7%	3.18
AETC	5%	15%	27%	44%	10%	3.39
Silver Flag	15%	35%	20%	30%	0%	2.65

Statement #32: *"Compared to other CE requirements at my current base, readiness training receives a low priority."*

Construct: Quality of Training (priority)

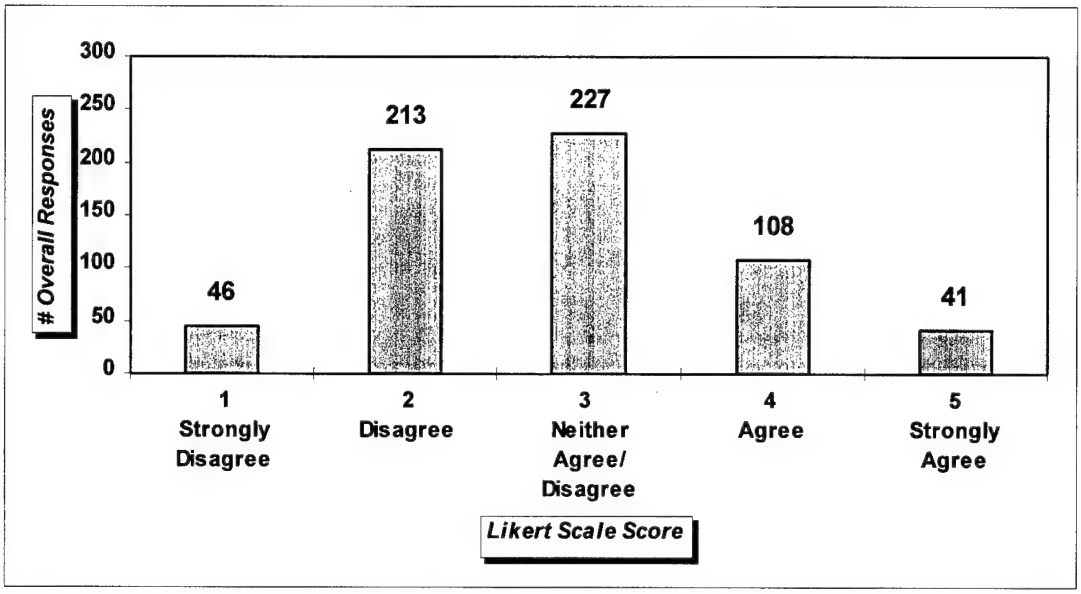

Figure B.25: Number of Overall Responses to Statement #32

Table B.25: Breakdown of Responses by Group to Statement #32

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	7%	34%	36%	17%	7%	2.81
Officers	5%	33%	16%	31%	16%	3.19
Enlisted	8%	34%	38%	16%	6%	2.78
Flying MAJCOMs	6%	32%	37%	19%	6%	2.87
Non-Flying MAJCOMs	10%	35%	37%	12%	6%	2.70
ACC	7%	36%	35%	18%	4%	2.75
AMC	4%	28%	39%	20%	10%	3.02
AFMC	15%	38%	30%	11%	5%	2.53
AFSPC	2%	31%	49%	13%	5%	2.87
AETC	12%	37%	27%	15%	10%	2.73
Silver Flag	5%	40%	5%	35%	15%	3.15

Statement #33: *"The readiness training I receive is appropriate for skills I might need during a contingency."*

Construct: Quality of Training (appropriateness)

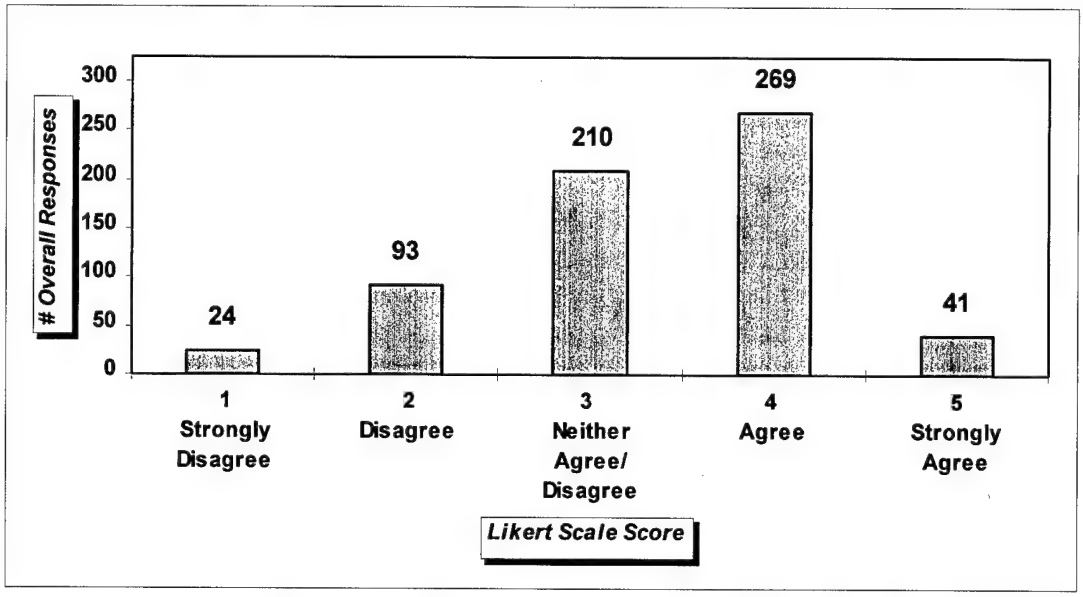

Figure B.26: Number of Overall Responses to Statement #33

Table B.26: Breakdown of Responses by Group to Statement #33

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	4%	15%	33%	42%	7%	3.33
Officers	3%	21%	28%	40%	9%	3.29
Enlisted	4%	14%	34%	42%	7%	3.34
Flying MAJCOMs	4%	16%	33%	42%	6%	3.31
Non-Flying MAJCOMs	3%	12%	34%	44%	7%	3.40
ACC	4%	17%	33%	40%	7%	3.28
AMC	3%	14%	33%	45%	5%	3.35
AFMC	4%	12%	25%	52%	7%	3.45
AFSPC	2%	16%	41%	36%	6%	3.27
AETC	2%	5%	39%	44%	10%	3.54
Silver Flag	10%	25%	30%	25%	10%	3.00

Statement #34: *"I receive adequate training time with the actual equipment I'll be using during a contingency."*

Construct: Quality of Training (hands-on)

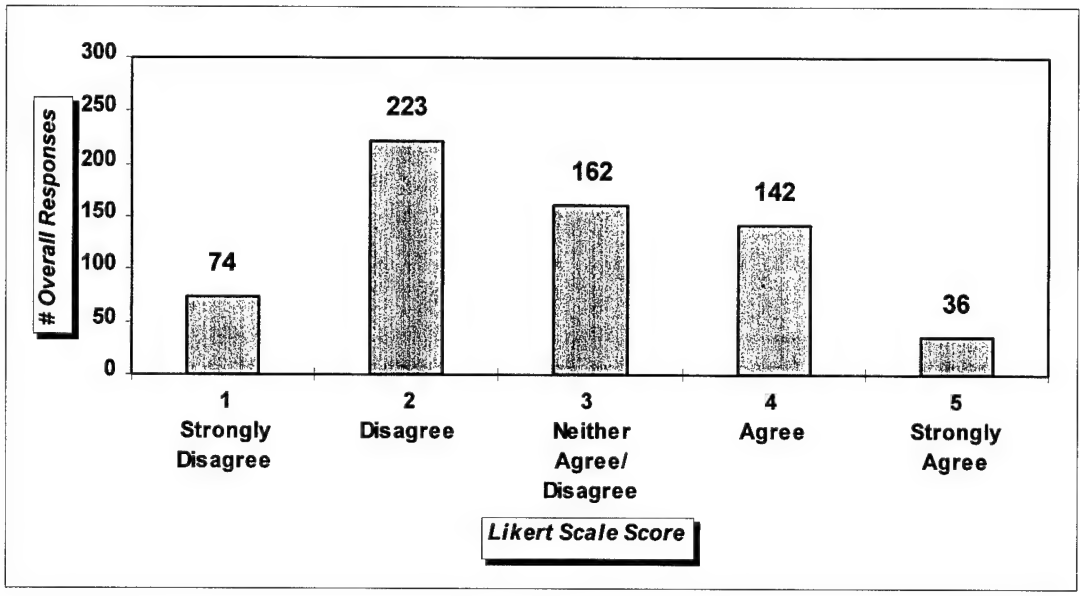

Figure B.27: Number of Overall Responses to Statement #34

Table B.27: Breakdown of Responses by Group to Statement #34

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	12%	35%	25%	22%	6%	2.75
Officers	12%	41%	19%	24%	3%	2.66
Enlisted	12%	35%	26%	22%	6%	2.76
Flying MAJCOMs	10%	35%	25%	24%	6%	2.79
Non-Flying MAJCOMs	14%	34%	26%	20%	6%	2.70
ACC	9%	39%	24%	23%	6%	2.77
AMC	12%	31%	28%	24%	6%	2.82
AFMC	13%	32%	25%	22%	9%	2.82
AFSPC	14%	41%	24%	18%	4%	2.56
AETC	15%	27%	34%	22%	2%	2.71
Silver Flag	15%	40%	20%	20%	5%	2.60

Statement #35: *"I am confident in my contingency skills."*

Construct: Self-Confidence

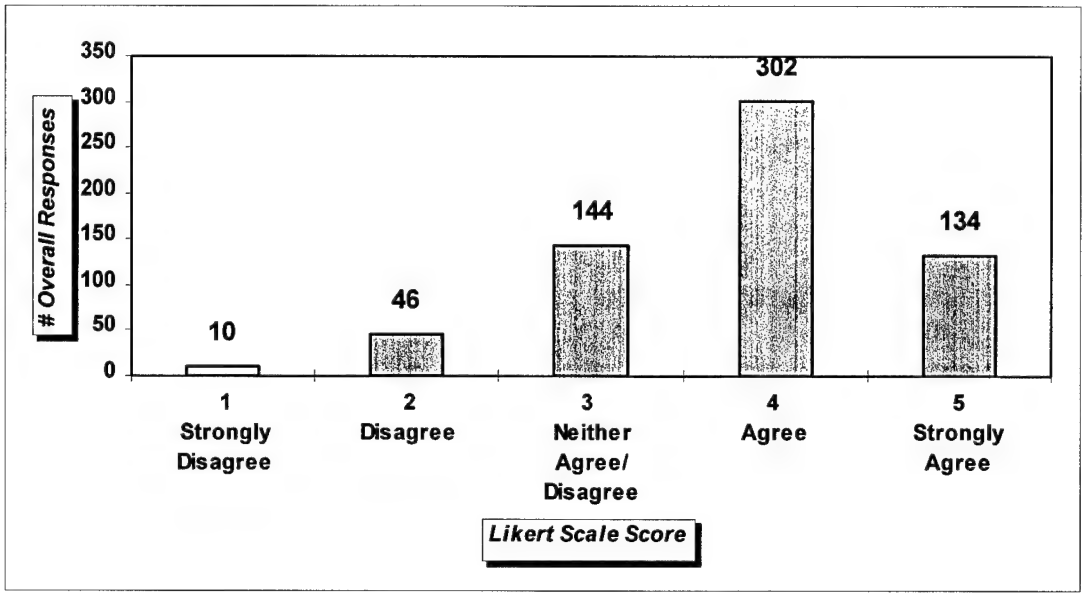

Figure B.28: Number of Overall Responses to Statement #35

Table B.28: Breakdown of Responses by Group to Statement #35

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	2%	7%	23%	48%	21%	3.80
Officers	7%	16%	19%	47%	12%	3.41
Enlisted	1%	6%	23%	48%	22%	3.82
Flying MAJCOMs	2%	8%	24%	45%	22%	3.77
Non-Flying MAJCOMs	1%	6%	20%	53%	21%	3.88
ACC	2%	9%	25%	42%	22%	3.74
AMC	1%	7%	22%	49%	21%	3.81
AFMC	0%	5%	21%	52%	22%	3.90
AFSPC	2%	7%	24%	54%	13%	3.68
AETC	0%	2%	10%	51%	37%	4.22
Silver Flag	10%	10%	30%	40%	10%	3.30

Statement #36: *"I need more readiness training than what I get at Silver Flag and in my home station training in order to feel confident about performing my duties during a contingency."*

Construct: Self-Confidence

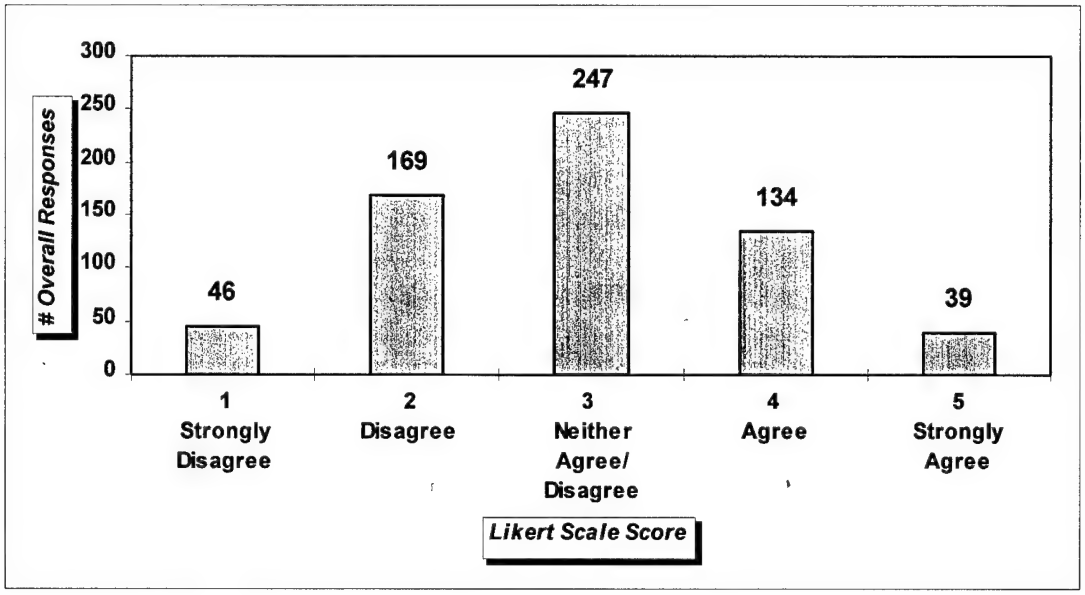

Figure B.29: Number of Overall Responses to Statement #36

Table B.29: Breakdown of Responses by Group to Statement #36

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	7%	27%	39%	21%	6%	2.93
Officers	0%	31%	19%	40%	10%	3.29
Enlisted	8%	26%	41%	19%	6%	2.89
Flying MAJCOMs	6%	27%	40%	21%	6%	2.93
Non-Flying MAJCOMs	10%	25%	39%	19%	7%	2.88
ACC	5%	31%	39%	20%	5%	2.87
AMC	8%	21%	42%	24%	7%	3.01
AFMC	9%	26%	39%	17%	10%	2.92
AFSPC	10%	24%	41%	19%	6%	2.88
AETC	12%	24%	37%	24%	2%	2.80
Silver Flag	0%	40%	10%	40%	10%	3.20

Statement #37: *"If deployed to a contingency setting tomorrow, I am confident in my squadron's ability to get the job done."*

Construct: Confidence in Unit

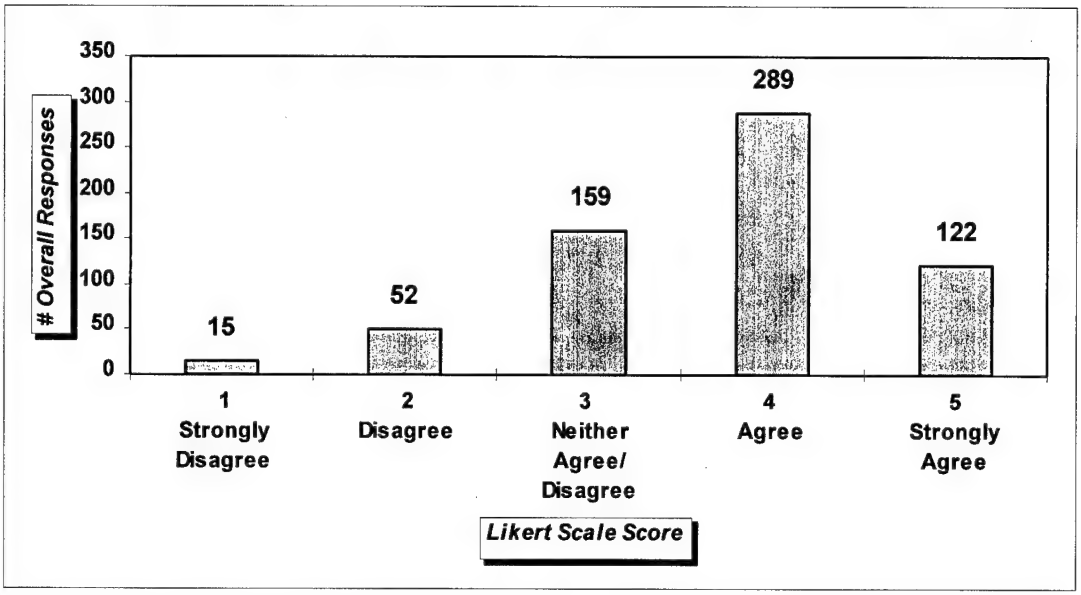

Figure B.30: Number of Overall Responses to Statement #37

Table B.30: Breakdown of Responses by Group to Statement #37

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	2%	8%	25%	45%	19%	3.71
Officers	2%	5%	16%	48%	29%	3.98
Enlisted	2%	8%	26%	45%	18%	3.68
Flying MAJCOMs	3%	9%	27%	44%	17%	3.62
Non-Flying MAJCOMs	1%	7%	24%	47%	23%	3.85
ACC	3%	10%	23%	43%	21%	3.69
AMC	4%	8%	31%	46%	11%	3.53
AFMC	1%	7%	23%	39%	30%	3.91
AFSPC	0%	5%	25%	54%	17%	3.82
AETC	0%	10%	22%	51%	17%	3.76
Silver Flag	5%	5%	10%	50%	30%	3.95

Statement #38: *"I am not confident I could do whatever is asked of me in a contingency setting."*

Construct: Self-Confidence

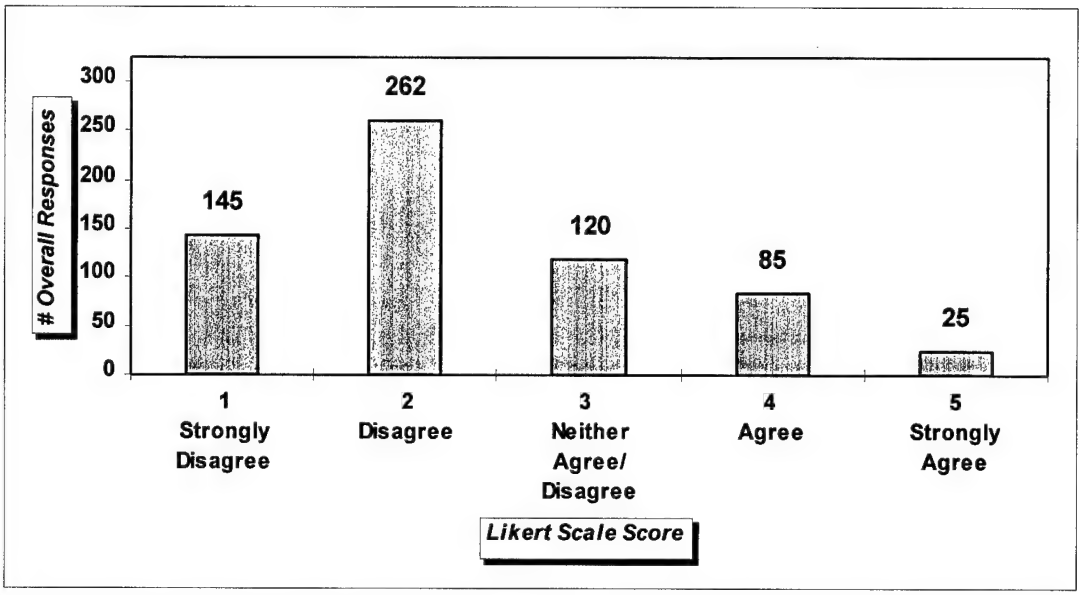

Figure B.31: Number of Overall Responses to Statement #38

Table B.31: Breakdown of Responses by Group to Statement #38

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	23%	41%	19%	13%	4%	2.34
Officers	24%	45%	10%	16%	5%	2.33
Enlisted	23%	41%	20%	13%	4%	2.34
Flying MAJCOMs	22%	38%	22%	14%	5%	2.42
Non-Flying MAJCOMs	25%	46%	14%	13%	2%	2.23
ACC	24%	40%	22%	10%	3%	2.27
AMC	18%	35%	22%	18%	7%	2.61
AFMC	22%	44%	17%	14%	3%	2.34
AFSPC	25%	48%	12%	16%	0%	2.18
AETC	32%	46%	10%	7%	5%	2.07
Silver Flag	20%	55%	10%	10%	5%	2.25

Statement #39: *"My squadron is fully prepared for any contingency."*

Construct: Confidence in Unit

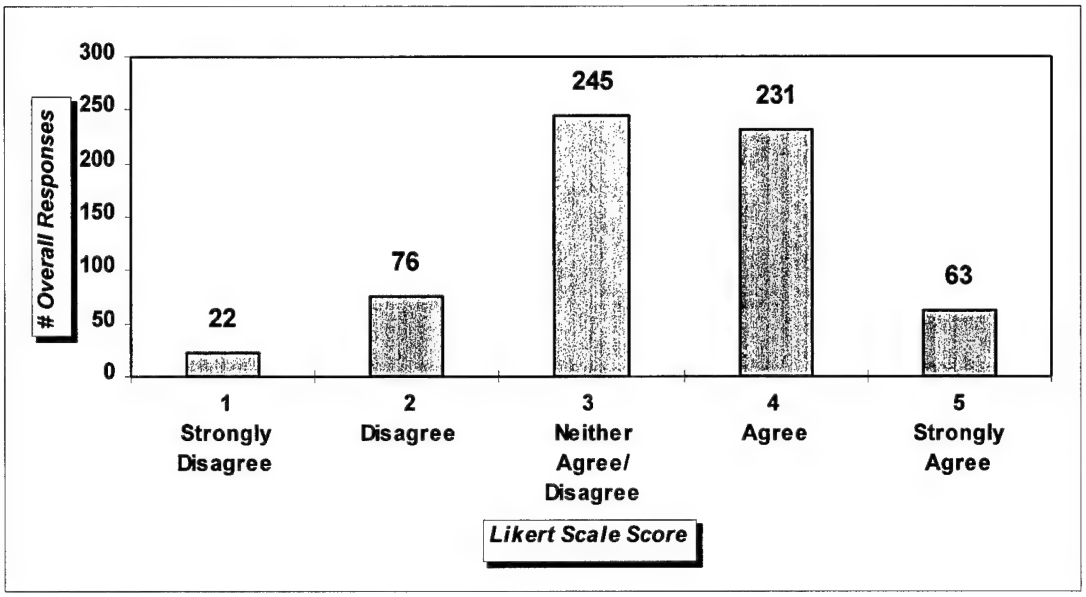

Figure B.32: Number of Overall Responses to Statement #39

Table B.32: Breakdown of Responses by Group to Statement #39

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	4%	12%	39%	36%	10%	3.37
Officers	3%	14%	36%	40%	7%	3.33
Enlisted	3%	12%	39%	36%	10%	3.38
Flying MAJCOMs	4%	11%	40%	35%	10%	3.37
Non-Flying MAJCOMs	2%	12%	38%	38%	10%	3.42
ACC	4%	10%	38%	34%	13%	3.41
AMC	4%	11%	42%	37%	7%	3.30
AFMC	1%	11%	36%	42%	10%	3.49
AFSPC	1%	13%	44%	31%	11%	3.37
AETC	5%	15%	29%	42%	10%	3.37
Silver Flag	5%	30%	25%	40%	0%	3.00

***Statement #40**: "I am satisfied with the quality of readiness training I receive."*

Construct: Quality of Training (overall)

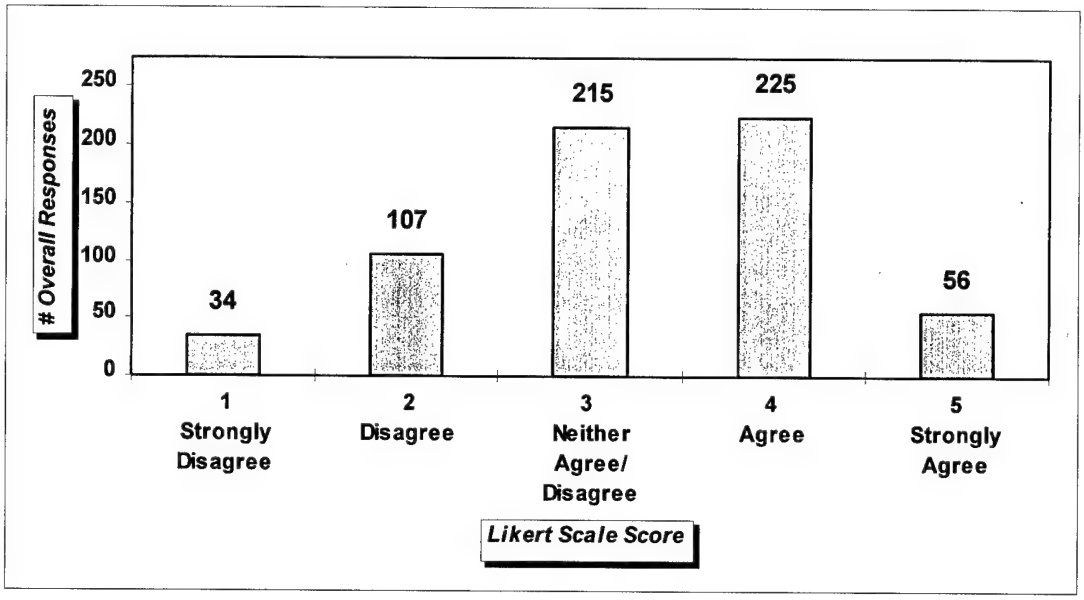

Figure B.33: Number of Overall Responses to Statement #40

Table B.33: Breakdown of Responses by Group to Statement #40

Respondents	1 Strongly Disagree	2 Disagree	3 Neither Agree/ Disagree	4 Agree	5 Strongly Agree	MEAN SCORE (Likert Scale)
Overall	5%	17%	34%	35%	9%	3.25
Officers	9%	26%	36%	22%	7%	2.93
Enlisted	5%	16%	34%	36%	9%	3.29
Flying MAJCOMs	5%	14%	37%	37%	8%	3.29
Non-Flying MAJCOMs	6%	20%	30%	36%	10%	3.24
ACC	5%	12%	37%	36%	11%	3.36
AMC	5%	18%	36%	38%	4%	3.19
AFMC	8%	15%	30%	36%	11%	3.27
AFSPC	4%	24%	31%	33%	8%	3.19
AETC	5%	22%	24%	39%	10%	3.27
Silver Flag	15%	35%	25%	10%	15%	2.75

Appendix C

SAS Program for Survey Analysis

```
options linesize=80 date;

proc format;
value lowrank 1='AB' 2='A1C' 3='A1C' 4='SrA' 5='SSgt' 6='TSgt' 7='other';
value midrank 1='MSgt' 2='SMSgt' 3='CMSgt' 4='2Lt' 5='1Lt' 6='Capt' 7='other';
value highrank 1='Maj' 2='Lt Col' 3='Col' 4='other' 7='other';
value dutycata 1='Officer' 2='Electr' 3='HVAC' 4='Pav/Equip' 5='Struc' 6='Util'
      7='other';
value dutycatb 1='Power Pro' 2='Eng Asst' 3='Read/DP' 4='Liq Fuel' 5='Pest Mgmt'
      6='Env Mgmt' 7='other';
value degree 1='None Held' 2='CE' 3='ME' 4='EE' 5='Archit' 6='Other Eng'
      7='Other';
value flight 1='Operations' 2='Engineering' 3='Readiness' 4='Environ' 5='Housing'
      6='Resources' 7='Other';
value hrsmonth 1='four' 2='eight' 3='twelve' 4='sixteen' 5='more';
value resemble 1='20 percent' 2='40 percent' 3='60 percent' 4='80 percent' 5='more';
value timedepl 1='Never' 2='Once' 3='Twice' 4='Thrice' 5='more';
value daysdepl 1='None' 2='2 Weeks' 3='2 Months' 4='4 Months' 5='more';
value assigned 1='2 Mos' 2='6 Mos' 3='1 Year' 4='1.5 Yrs' 5='longer';
value likert 1='Str Disagree' 2='Disagree' 3='Neutral' 4='Agree' 5='Str Agree';
value baseida 1='(base name)' 2='(base name)' 3='(base name)' 4='(base name)'
      5='(base name)' 6='(base name)' 7='other';
value baseidb 1='(base name)' 2='(base name)' 3='(base name)' 4='other';

data results;
infile realdata missover;
 input lowrank 1 midrank 2 highrank 3 dutycat1 4 dutycat2 5 degree 6 flight 7
hrsmonth
 8 percent 9 timedepl 10 daysdepl 11 assigned 12 perquan1 13 untquan2 14 realist1 15
 effecti1 16 adequat2 17 appropr2 18 priorit1 19 handson2 20 overall2 21 perscon1 22
 perscon4 23 perscon5 24 unitcon2 25 unitcon4 26 untquan1 27 perquan2 28 realist2 29
 effecti2 30 adequat1 31 priorit2 32 appropr1 33 handson1 34 perscon3 35 perscon2 36
 unitcon1 37 perscon6 38 unitcon3 39 overall1 40 baseid1 41 baseid2 42;

IF (lowrank=1 OR lowrank=2 OR midrank=4) AND (assigned=1 OR assigned=2)
THEN delete;

IF (effecti1=6 OR effecti1=7) THEN delete;
IF (adequat2=6 OR adequat2=7) THEN delete;
IF (handson2=6 OR handson2=7) THEN delete;
IF (perscon1=6 OR perscon1=7) THEN delete;
IF (perscon5=6 OR perscon5=7) THEN delete;
IF (untquan1=6 OR untquan1=7) THEN delete;
```

```
IF (perquan2=6 OR perquan2=7) THEN delete;
IF (effecti2=6 OR effecti2=7) THEN delete;
IF (adequat1=6 OR adequat1=7) THEN delete;
IF (priorit2=6 OR priorit2=7) THEN delete;
IF (appropr1=6 OR appropr1=7) THEN delete;
IF (handson1=6 OR handson1=7) THEN delete;
IF (pescon3=6 OR perscon3=7) THEN delete;
IF (unitcon1=6 OR unitcon1=7) THEN delete;
IF (perscon6=6 OR perscon6=7) THEN delete;
IF (unitcon3=6 OR unitcon3=7) THEN delete;
IF (overall1=6 OR overall1=7) THEN delete;

IF baseid2=. THEN delete;

label lowrank='Lower Ranking Personnel'
      midrank='Mid Ranking Personnel'
      highrank='High Ranking Personnel'
      dutycat1='AFSC'
      dutycat2='AFSC'
      degree='Bachelor Degree Held'
      hrsmonth='Hours per month spent in training'
      percent='Percent of time using wartime skills'
      timedepl='Number of times deployed before'
      daysdepl='Number of days deployed in past year'
      assigned='How long assigned to current unit';

format lowrank lowrank. midrank midrank. highrank highrank. dutycat1 dutycata.
      dutycat2 dutycatb. degree degree. flight flight. hrsmonth hrsmonth.
      percent resemble. timedepl timedepl. daysdepl daysdepl. assigned assigned.
      perquan1--overall1 likert. baseid1 baseida. baseid2 baseidb.;

perquan=(perquan1+(6-perquan2))/2; untquan=(untquan1+(6-untquan2))/2;
realist=(realist1+(6-realist2))/2; effecti=(effecti1+(6-effecti2))/2;
adequat=(adequat1+(6-adequat2))/2; appropr=(appropr1+(6-appropr2))/2;
priorit=(priorit1+(6-priorit2))/2; handson=(handson1+(6-handson2))/2;
overall=(overall1+(6-overall2))/2;

totqual=(realist+effecti+adequat+appropr+priorit+handson)/6;

perscon=(perscon1+(6-perscon2)+perscon3+(6-perscon4)+perscon5+(6-perscon6))/6;
unitcon=(unitcon1+(6-unitcon2)+unitcon3+(6-unitcon4))/4;

quanqual=((perquan+untquan)/2+totqual)/2;
```

```
IF baseid=1 OR baseid1=2  OR baseid1=3 THEN MAJCOM='ACC';
IF baseid=4 OR baseid1=5 THEN MAJCOM='AMC';
IF baseid1=6 THEN MAJCOM='AFMC';
IF baseid2=1 THEN MAJCOM='AFSPC';
IF baseid2=2 THEN MAJCOM='AETC';
IF baseid2=3 THEN MAJCOM='Silver Flag';

IF MAJCOM='ACC' THEN Mission='Flying';
        ELSE IF MAJCOM='AMC' THEN Mission='Flying';
        ELSE IF MAJCOM='AFM' THEN Mission='NonFlying';
        ELSE IF MAJCOM='AFS' THEN Mission='NonFlying';
        ELSE IF MAJCOM='AET' THEN Mission='NonFlying';
        ELSE Mission='Unknown';

IF baseid1=1 THEN Base='(base name)';
IF baseid1=2 THEN Base='(base name)';
IF baseid1=3 THEN Base='(base name)';
IF baseid1=4 THEN Base='(base name)';
IF baseid1=5 THEN Base='(base name)';
IF baseid1=6 THEN Base='(base name)';
IF baseid1=1 THEN Base='(base name)';
IF baseid1=2 THEN Base='(base name)';
IF baseid1=3 THEN Base='(base name)';

IF midrank=4 OR midrank=5 OR midrank=6 OR highrank=1 OR highrank=2 OR
        highrank=3 THEN Class='Officer';
        ELSE Class='Enlisted';

/*>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<*/

proc corr alpha nomiss rank;
        var perquan1--overall1;
        title 'Reliability Test of Individual Survey Statements';

proc corr alpha nomiss rank;
        var perquan untquan realist effecti adequat appropr priorit handson overall
                perscon unitcon;
        title "Reliability Test of Combined Survey Statements';

proc freq;
tables lowrank--baseid2 MAJCOM Mission Base Class;
        title 'Simple Frequency Count of Overall Results';
```

```
/*>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<*/

proc corr alpha nomiss rank;
        var realist effecti adequat appropr priorit handson overall totqual perquan
                untquan perscon unitcon quanqual lowrank midrank highrank hrsmonth
                percent timedepl daysdepl assigned;
        title 'Correlational Analysis For Perception vs Demographic Variables';

/*>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<*/

proc ttest data=results;
        class Class;
        var overall totqual perquan uniquan quanqual perscon unitcon;
        title 'T-Test for Determining Differences between Officers/Enlisted';

proc glm data=results;
        class Mission;
        model overall totqual perquan untquan quanqual perscon unitcon=Mission;
        means Mission / Tukey;
        means Mission;
        title 'ANOVA for Determining Difference between Flying/NonFlying';

proc glm data=results;
        class MAJCOM;
        model overall totqual perquan untquan quanqual perscon unitcon=MAJCOM;
        means MAJCOM / Tukey;
        means MAJCOM;
        title 'ANOVA for Determining Difference between MAJCOMs';

proc glm data=results;
        class dutycat1;
        model overall totqual perquan untquan quanqual perscon unitcon=dutycat1;
        means dutycat1 / Tukey;
        means dutycat1;
        title 'ANOVA for Determining Difference between certain AFSCs';

proc glm data=results;
        class degree;
        model overall totqual perquan untquan quanqual perscon unitcon=degree;
        means degree / Tukey;
```

```
        means degree;
        title 'ANOVA for Determining Difference between differing degrees/education
              levels';
proc glm data=results;
        class flight;
        model overall totqual perquan untquan quanqual perscon unitcon=flight;
        means flight / Tukey;
        means flight;
        title 'ANOVA for Determining Difference between Flights';

/*>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<*/

data officers;
        set results;
 if Class='Officer';

proc freq data=officers;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of Officers';

data enlisted;
        set results;
 if lowrank=1 OR lowrank=2 OR lowrank=3 OR lowrank=4 OR lowrank=5 OR
        lowrank=6 OR midank=1 OR midrank=2 OR midrank=3;

proc freq data=enlisted;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of Enlisted';

data flying;
        set results;
 if Mission='Flying';

proc freq data=flying;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of Flying Units';


data nonfly;
        set results;
 if baseid1=6 OR baseid2=1 OR baseid2=2;
```

```
proc freq data=nonfly;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of Non-Flying Units';

data ACC;
        set results;
 if MAJCOM='ACC';

proc freq data=ACC;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of ACC';

data AMC;
        set results;
 if MAJCOM='AMC';

proc freq data=AMC;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of AMC';

data AFMC;
        set results;
 if MAJCOM='AFMC';

proc freq data=AFMC;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of AFMC';

data AFSPC;
        set results;
 if MAJCOM='AFSPC';

proc freq data=AFSPC;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of AFSPC';




data AETC;
        set results;
 if MAJCOM='AETC';
```

```
proc freq data=AETC;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of AETC';

data SilvFlag;
        set results;
 if baseid2=3;

proc freq data=SilvFlag;
        tables midrank--baseid2 MAJCOM Mission Base Class;
        title 'Frequency Analysis of Silver Flag';

/*>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<*/

proc means n mean std maxdec=2 data=officers;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of Officer Responses';

proc means n mean std maxdec=2 data=enlisted;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of Enlisted Responses';

proc means n mean std maxdec=2 data=flying;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of Flying Unit Responses';

proc means n mean std maxdec=2 data=nonfly;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of Non-Flying Unit Responses';

proc means n mean std maxdec=2 data=ACC;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of ACC Responses';

proc means n mean std maxdec=2 data=AMC;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
```

```
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of AMC Responses';

proc means n mean std maxdec=2 data=AFMC;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of AFMC Responses';

proc means n mean std maxdec=2 data=AFSPC;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of AFSPC Responses';

proc means n mean std maxdec=2 data=AETC;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of AETC Responses';

proc means n mean std maxdec=2 data=SilvFlag;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of Silver Flag Responses';

data readiflt;
 set results;
if flight=3;

proc means n mean std maxdec=2 data=readiflt;
 var perquan1--overall1 perquan untquan realist effecti adequat appropr priorit handson
        overall totqual quanqual perscon unitcon;
 title 'Means Analysis of Readiness Flight Responses';

proc plot data=results;
        plot perscon*totqual;

run;
```

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Vita

Captain David Wade Lawrence was born in Lubbock, Texas on 10 March 1968. He graduated from Layton High School, Layton, Utah in 1986 and entered Oklahoma Christian University in Edmond, Oklahoma. He graduated from Oklahoma Christian in 1991 with a Bachelor of Science degree in Electrical Engineering, and received a reserve commission as a second lieutenant in the Air Force from the University of Oklahoma ROTC program.

He entered active duty in April 1992 at Castle Air Force Base, California, and was assigned as a utility engineer. While at Castle, he also fulfilled the duties of Chief of Maintenance Engineering and Closure Flight Chief. In May of 1995, Captain Lawrence was transferred to the 554th RED HORSE squadron at Osan Air Base, Republic of Korea and served for one year as a project engineer. He was then selected to attend the Graduate Engineering and Environmental Management program at the Air Force Institute of Technology, opting for the Engineering Management track. After receiving a Masters of Science degree in Engineering and Environmental Management, Captain Lawrence was assigned to the 819th RED HORSE squadron at Malmstrom Air Force Base, Montana.

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13. ABSTRACT *(Maximum 200 words)*

This thesis examined the readiness training perception levels and task self-confidence of CE Prime BEEF personnel, and investigated the relationships between these two constructs. A heuristic model was developed which hypothesized that since previous research has shown that perception of training affects self-efficacy, and that self-efficacy affects performance, it may be inferred that training perception ultimately affects task performance. Surveys were sent to the target population to gather demographic data, perceptions of Prime BEEF readiness training and task confidence in both self and unit. Despite an improvement in perceptions over the past 12 years, results showed somewhat mediocre perception levels of readiness training, although task confidence yielded significantly higher mean Likert scale scores. Correlational analysis indicated a statistically significant, moderate correlation between perception of readiness training and task self-confidence, lending strength to the proposed model. Training adequacy and effectiveness were the aspects most strongly correlated with task self-confidence, while training realism and hands-on had the weakest correlation with task self-confidence out of all aspects of training quality. Few demographic variables showed statistically significant correlation with training perception or confidence. Time spent in readiness training and the percent of time performing tasks during peacetime duties which closely resemble wartime tasks had the strongest correlation to task confidence out of all demographic variables. Finally, analysis indicated that officers tend to have lower readiness training perception levels and task confidence than do enlisted personnel.

14. SUBJECT TERMS
Air Force Engineering; Civil Engineering; Prime BEEF; Readiness Training; Self-Efficacy; Self-Confidence; Training Perception; Air Force Training; Military Training; Motivation; Perception; Military Engineers; Training; Confidence Level; Transfer of Training; Behavior;

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